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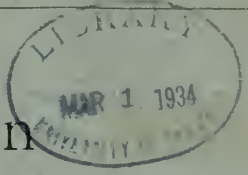

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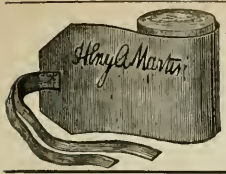

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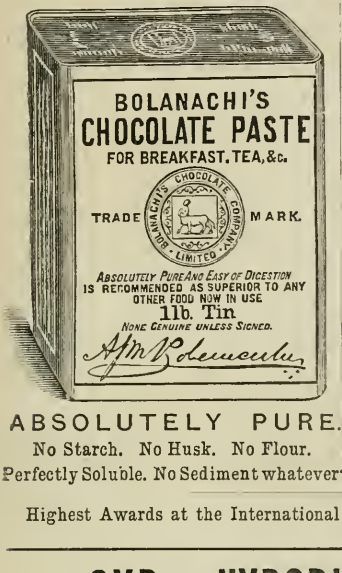

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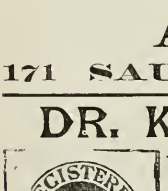

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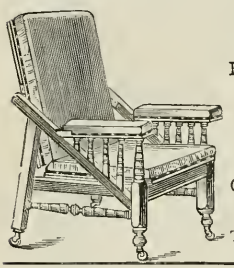

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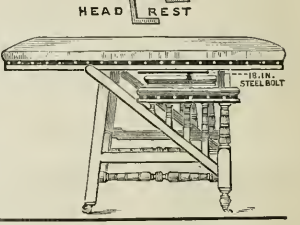

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The London Medical Record.

Article 5009.

WYSS ON THE USE OF CUCAINE.

Dr. Wyss, of Geneva, contributes a paper on this subject to *Der Fortschritt*, Nov. 5, 1885.

The anæsthetic properties of cucaine rapidly rendered this remedy very popular, and led to its trial in a multitude of affections.

Professor Manassein, of St. Petersburg, has lately employed it with signal success in sea-sickness on himself and a number of fellow-passengers. This fact induced the author to test the efficacy of cucaine in the vomiting of tuberculosis. Although he has only given it during the short period of a fortnight, he already is able to record excellent results in three tuberculous patients suffering almost daily from distressing vomiting. He prescribed the cucaine in solution for swabbing the pharynx or for internal use, *e.g.* Cucaini muriatici, gr. viij. (0·5 gramme) ; aquæ destill, ʒj.–ʒjss. (30 to 50 grammes) ; alcohol, q.s. (N.B. The alcohol is added in order to render the solution more stable.) From 5 to 10 minims are to be taken in water before or after meals, or at the time of the most violent attacks of coughing (usually in the morning and in the evening).

According to a communication in the *Philadelphia Therapeutical Gazette*, Dr. Greenwell, of Cleburne, Texas, prescribed this remedy with complete success to a child, aged 3 years, suffering from croup. The few details of the case, given by Dr. Greenwell, make it doubtful whether the complaint was genuine diphtheritic croup, or rather stridulous laryngitis or false croup. In the latter disease cucaine might be beneficial; but the symptoms generally appear and cease too rapidly to allow time for the use of this medicine in every instance. Kohts, of Strasburg, who tried cucaine in a number of cases of angina and croup, generally only observed a temporary diminution of pain and of dysphagia.

Cases of successful treatment of whooping-cough with cucaine are also reported. This disease being extremely rare at Geneva, the author has had no opportunity yet of giving it a fair trial.

Walle and Jaeckel have published in the *Deutsche Medicinal Zeitung* favourable results from the employment of cucaine in the treatment of morphia-mania, by withholding morphia. Subcutaneous injections of muriate of cucaine to as much as 12 grains daily, materially assisted in carrying out with greater facility and more rapidly the complete and definitive subtraction of morphia. As symptoms, probably due to the use of cucaine, however, general weakness, faintness, and occasionally icteric discoloration of the skin, have been noticed.

Erlenmeyer, who had tried cucaine for the same purpose, denies its efficacy altogether. At the utmost, he observed a very slight momentary diminution of the mania, but he never experienced a permanent influence of cucaine in the course of treatment of morphia-mania by subtraction of morphia.

Dr. J. L. Corning, in the *New York Medical Journal*, reports a series of observations on the production of local anæsthesia by subcutaneous injection of hydrochlorate of cucaine, the principal advantage of which, according to his view, consists in submitting the nervous fibres during a longer or shorter time to the action of this anæsthetic agent. This method will be likely to find extensive use in surgery, and in the treatment of neuralgia and other affections of the peripheric nervous system.

Ferd. Adalb. Junker, M.D.

Article 5010.

BELLARMINOFF, TIKHOMIROFF, AND REICH ON CUCAINE IN OPHTHALMIC PRACTICE.*

In the *Russkaia Meditzina*, No. 38, 1885, p. 693, Dr. L. E. Bellarminoff, house-physician to Professor V. J. Dobrovolsky's Ophthalmological Clinic, in St. Petersburg, describes his observations concerning the action of cucaine on the accommodation, pupil, palpebral fissure, and adduction.

1. *Accommodation* was studied in twenty cases, cucaine being introduced into the eye either in substance, or in a 2 or 5 per cent. solution, sometimes for two to seven successive days, from four to six times daily. The conclusions arrived at are these. 1. The proximal point invariably recedes. In young subjects with emmetropic or slightly myopic eyes, the recession is, in average, not more than 1½ inch. 2. In presbyopic and hypermetropic cases the recession is more considerable (about 3 inches), simultaneously micropsia being observed ; the latter lasts for a certain period, even after the proximal point has returned to its normal stand. 3. Paresis of accommodation, though in a lesser degree, is observed also in moderately and highly myopic subjects (meanwhile, Weber has found in myopes an approximation of the nearest point under cucaine). 4. As a rule, paralysis of accommodation occurs almost simultaneously with dilatation of the pupil, but the maximal dilatation comes somewhat earlier than the greatest degree of paralysis of accommodation. Under prolonged use of cucaine, accommodation varies approximately within the same limits as after only one or two instillations. Stronger solutions of the drug, as well as cucaine in substance, remove the proximal point somewhat further, but nevertheless they are also unable to overpower spasm of accommodation.

2. *Dilatation of the Pupil* from cucaine was studied parallel with that from atropine, the measurements being taken by means of Helmholtz's ophthalmometer. From this series of observations the author draws the following conclusions. 1. As a mydriatic, cucaine is weaker than atropine. 2. The combined action of cucaine and atropine gives a considerably greater dilatation of the pupil, comparatively with the usual maximum dilatation. Hence, a mixture of the two alkaloids may be recognised as the most powerful mydriatic known. [This statement, which is identical with that by Mr. Jessop, was first made by Dr. Bellarminoff at the meeting of the St. Petersburg Russian Medical Society on Dec. 6 (18) 1884, *see* the *Vratch*, No. 50, 1884, p. 850.—*Rep.*] 3. The difference between cucaine-mydriasis and atropine-mydriasis varies within wide limits. The least difference is observed in myopes, in whom cucaine gives mydriatic effects

* Bellarminoff, L. E.—On the Action of Cucaine on the Eye (*Russkaia Meditzina*, No. 38, 1885, pp. 693-95).

almost equal to those produced by atropine. It is greater in presbyopes and still greater in hypermetropes. 4. In cases of mydriasis depending upon paralysis of the oculo-motor nerve, cucaine produces a further extremely striking dilatation of the pupil. 5. From the above facts, it becomes evident that cucaine produces mydriasis by stimulating the endings of the sympathetic nerve.

3. *Enlargement of the Palpebral Slit* is dependent upon (*a* decrease of reflex stimulation of the palpebral sphincter, and (*b*) stimulation of the branch of the sympathetic nerve which presides over the contractions of Müller's palpebral muscle. Hence cucaine proves a valuable means for controlling blepharospasm, with flow of tears.

4. *The Power of Adduction* does not undergo any change from cucaine (though Weber did find an increase). In conclusion, Dr. Bellarminoff draws attention to a peculiar untoward effect of frequent instillation of strong cucaine solutions, which consists in desquamation of the epithelial cells of the cornea, the latter becoming uneven and facetted on its anterior surface. The desquamation is accompanied by decrease in acuteness of vision. Within from six to twelve hours, however, everything returns to the normal state. A similar observation was recently published by Dr. Bunge in the *Klin. Monatsbl. für Augenheilkunde*, Sept. 1885.

At a meeting of the St. Petersburg Russian Medical Society, Dr. Nikolai J. Tikhomiroff* reported (*Vratch*, No. 50, 1884, p. 850) that he had used cucaine either in a 5 per cent. solution (of the hydrochlorate), or in vaseline ointment (with the pure alkaloid) in a number of ophthalmic cases. Anæsthesia of the conjunctiva and cornea developed itself the more rapidly, the greater was the strength of the solution or ointment used; it lasted about six minutes in the case of a 1 per cent. solution, and from ten to fifteen minutes in that of a 1 per cent. ointment. Dilatation of the pupil occurred not earlier than fifteen minutes after the introduction of the drug. Only the bulbar conjunctiva grew pale, but not the palpebral. The best results were obtained by Dr. Tikhomiroff in cases of iridectomy, extraction of cataract, discission of secondary cataract; then in blepharospasm of a conjunctival origin, and in keratitis. In operations for strabismus, the division of the muscle was painful. No relief of pain was obtained in glaucoma.

In the *Russkaia Meditzina*, No. 30, 1885, p. 556, Dr. Mikhail J. Reich,† of Tiflis, records two cases in which the employment of a 2 per cent. solution of hydrochlorate of cucaine in the course of ophthalmic operations gave rise to general toxic symptoms. In one of the patients, a girl, aged 10, who was undergoing iridectomy for leucoma, about twelve or fifteen drops of the solution were instilled three drops at a time, at intervals of several minutes. The operation having been completed absolutely without pain, the patient returned home with her mother and immediately went to bed, as she felt very poorly: there appeared considerable prostration, paleness, nausea, and vomiting. On the next morning, however, the girl was brought to the author quite well and cheerful, the wound having been united. In another out-patient, an old, but fairly hale woman, aged 60, discission of consecutive cataract was performed, and from eight to ten minims of the solution, in three doses, were instilled into the conjunctival sac. In about two hours after the operation (which was entirely painless), there appeared pain in the eye operated upon, headache, considerable general weakness, frontal perspiration, tremor of the hands, and giddiness. The pain and headache disappeared in about half-an-hour; the remaining symptoms lasted, though gradually decreasing, till the night. These are the only two cases of cucaine-poisoning which have come under the author's observation, though he uses the drug daily in numerous cases, and often in stronger (3 and 4 per cent.) solutions, the dose sometimes reaching 3 centigrammes of the dry alkaloid.

Dr. Reich is inclined to explain the cases above either by an idiosyncratic susceptibility of the patients to cucaine, or by the preparation being impure (possibly, falsified by the admixture of apomorphine). At all events he advises, in cucainising children and weak adults, to constantly keep in view a possibility of some untoward symptoms, even after the use of trifling quantities of the drug.

V. IDELSON, M.D.

* TIKHOMIROFF, N. J.—On the Use of Cucaine in Ophthalmic Practice. (*Vratch*, No. 50, 1884, p. 850.)

† REICH, M. J.—On the Toxic Effects of Cucaine in Ophthalmic Practice. (*Russkaia Meditzina*, 1885, No. 30, pp. 555–557.)

ARTICLE 5011.

KATZAUROFF ON THE ACTION OF FULL AND PODAL HOT BATHS ON THE EYE.

IN the *Vratch*, Nos. 1 and 2, 1884, Dr. J. N. Katzauroff, of Jaroslavl, describes the experiments with full and foot hot water baths, which he has undertaken, conjointly with Dr. J. J. Orloff, to elucidate their action on the circulation in the eye and intra-ocular tension.

1. The *action of full baths* was studied (*a* in fifteen subjects with *normal* eyes, thirteen of them being pupils of the local school for *feldshers* (assistant-surgeons), aged from 15 to 20; one shopman, aged 40; and a woman, aged 30. In each of the cases a bath at 32° R., of fifteen minutes' duration, was employed. The following changes in the eye were found. 1. In a majority of the cases (in 11 of 15) the discs became considerably paler, in consequence of collapse of their capillaries. 2. As often (in 11 of 15) the retinal arteries became contracted, and the veins dilated. 3. In 13 of 15 cases a more or less considerable decrease in intra-ocular tension was observed, the phenomenon being dependent upon sinking of the blood-pressure in the ocular vessels. In the two cases where intra-ocular tension remained unchanged, no change in the blood-pressure was noted. 4. Within eight or ten minutes after the bath, the discs regained their normal colour, or even became somewhat rosier than they had been before the experiment; the change being always coincident with an improvement of the pulse, and usually with dilatation of the ophthalmic arteries and rise of the intra-ocular tension.

b. In two cases of *glaucoma* and in one of *congestio disci*. In one of the glaucomatous cases, that of an anæmic, weak woman, aged 43, with pronounced atheromatous degeneration of the aorta, the hot bath produced both a marked depression in the cardiac action and fall of the intra-ocular tension. In the other glaucomatous case, that of a man, aged 60, with nothing abnormal in the heart or vessels, no change either in the arterial or in the intra-ocular tension was observed. In the case of

congested discs, the hot bath markedly diminished œdematous swelling of the papilla, and increased the volume of the retinal arteries. From all the facts sketched above, Dr. Katzauroff draws the general conclusion that 'full hot baths in a majority of cases diminish the amount of blood in the posterior segment of the eye, but this diminution takes place only when the blood-tension is sinking, that is, only when the cardiac action is growing weaker.'

Discussing the practical question whether 'full hot baths may be used as a derivative means in cases of hyperæmia of the posterior segment of the eye,' the author gives a negative answer, in view of the bath producing a weakening action on the heart. To obtain an actual diminution of congestion within the eye, it would sometimes be necessary to bring the patient almost to a fainting condition. Besides, the derivative influence of the bath, of this 'double-edged weapon,' is not constant.

2. *Foot-Bath.*—As is well known, ophthalmologists attribute to podal hot baths a derivative action in regard to the eye, and, accordingly, recommend their employment in order to diminish ocular congestion. Thus, Professor Gustav J. Braun, of Moscow, in his *Handbook of Ophthalmic Diseases,* advises the use of podal hot baths, with addition of hydrochloric and nitric acid, in cases of posterior staphyloma. Professor Szokalski, in his *Ophthalmology* (translated into Russian by Professor M. Voinoff), regards the baths even as a powerful derivative, and explains their action by a simple determination of the blood to the legs. Professor Ed. Meyer, of Berlin, recommends the baths with mustard in neuroretinitis in anæmic subjects. Professor Adamuk, of Kazan, in his capital *Practical Treatise on Ophthalmic Diseases* (1881), administers daily podal hot baths, with mustard or nitric acid, in cases of high myopia of progressive character, and so on. In short, a belief in the strong revulsive properties of the baths under consideration is rooted pretty firmly and extensively in the professional mind. To verify this view, Drs. Katzauroff and Orloff examined the action of foot-baths in twelve subjects with normal eyes (again in feldshers) and in three patients with posterior staphyloma, myopic conus, &c. In the former group, a simple hot water bath, at 35° R., and of fifteen minutes' duration, was used. In the latter group there was added to hot water either potassa with mustard powder (one pound of each), or a mixture of strong hydrochloric and nitric acids (two ounces of each). The results obtained by the author were very remarkable and important in a practical sense. In none of the cases did the podal bath show the slightest derivative action; there was never found anything like paleness of the pupil, or collapse of the retinal arteries, or decrease of the intra-ocular tension. On the contrary, in an overwhelming majority of the cases there were present most distinct signs of increased congestion in the eye, such as reddening of the discs (14 cases), dilatation of the vessels (11), and rise of the tension (12), which phenomena were accompanied by an increased frequency of the pulse and a rise of the arterial tension (in 13 cases). All the changes remained still visible for ten to twenty minutes after the bath. In other words, podal hot baths do not belong at all to the means for diminishing the amount of blood in the eye; on the contrary, its use in posterior staphyloma, iritis, retinitis, and optic neuritis would, as a rule, lead to an increase of hyperæmia. Hence, according to the author, arterial hyperæmia of the posterior segment of the eye is a contra-indication to the use of the baths. The latter could be used only in cases of venous congestion in presence of collapse of the retinal arteries, where they would bring on resolution of stasis through stimulating the cardiac action [That podal hot baths are far from being derivative in a simple mechanical sense, that they do not simply 'allure the blood from the upper parts of the body to the feet,' may be seen, also, from Dr. Sholkovsky's researches, which will be found in the London Medical Record, Aug. 1882, p. 317.—*Rep.*]

V. Idelson, M.D.

Article 5012.

OERTEL ON THE TREATMENT OF OBESITY.

It is now twenty years or more since the late Mr. Banting attracted no small notoriety for himself, and a lesser degree for his medical attendant, by publishing the somewhat heroic treatment by means of which he had succeeded in relieving himself of a considerable part of his superabundant fat. Some years later a would-be baronet was, without his consent, subjected to a course of treatment in one of Her Majesty's establishments, which proved, we believe, even more successful; and quite recently a celebrated statesman has shown his gratitude to his medical attendant by an appointment which has raised a storm in the leading university of his country, the practitioner having, though more gently, reduced the dimensions of his unwieldy patient, who, already the greatest man in his Fatherland, was seriously apprehensive of becoming the biggest.

Meanwhile, a member of our profession, Dr. Oertel, of Munich, having with success applied the teaching of Pettenkofer and Voit to the improvement of his own personal health, comfort, and appearance, has published his experience for the benefit of the world at large.

Jesting apart, we must say that Dr. Oertel's 'Terrain Kur' does seem to be based on sound physiological principles, though, as he urges, it should not be attempted except under strict medical supervision.

According to Dr. Oertel, the treatment of obesity consists in strengthening of the weakened muscular substance of the heart, and this is to be effected by a limitation of the amount of fluid in food and drink, and the graduated exercise of the muscles, especially of the heart.

A fat man, he says, weighing 78 kilogrammes, will probably have 12 kilogrammes of blood, will consume daily 2,000 grammes of food, and in all four kilogrammes of water, while the fluid excreted will fall short of that ingested by 100 grammes, which will be daily added to the body-weight, *i.e.* to the blood and fluids in the tissues. Dr. Oertel begins by reducing the total weight of food to 900 or 1,000 grammes, or about one-half, and the water to a still lower proportion.

A healthy man takes usually about 130 grammes of albumen, 84 of fat, and 404 of carbohydrates; Oertel gives his patients 169 of albumen, 43 of fat, and 114 of carbohydrates. This increase of the nitrogenous and decrease of the non-nitrogenous food-stuffs is nothing new; but the true explanation was first given by E. Voit, who proved that, though

carbohydrates in excess tend to the production of fat, they act only as 'sparmittel,' or means of checking metabolism. Their proper function is to minister to the production of force, and the fat is formed from the albuminates, which break up into fat and urea, having previously combined with the elements of water, but a preponderance of albumen in the food favours a more rapid and complete metabolism of the albuminates into urea and uric acid, after they have raised to a maximum the albumen circulating in the fluids of the body.

At first the thirst felt is distressing, water being permitted only in small quantities, and after digestion has well begun; but it soon becomes unimportant, and the secretion of the kidneys is increased. Any œdema of the legs disappears, the limbs act more freely, and the heart's action is less feeble.

The next procedure, and that which gives the name to the 'cure,' consists in a course of exercise in walking, first on level ground, and then on gradually increasing gradients. For this purpose several establishments under medical direction have already been opened at Meran, Bozen, Arco, Baden-Baden, Abbazia, and other suitable sites on mountain-slopes, where the different stages are marked by large red figures painted on the rock. At first the patient is not allowed to speak, and bidden to walk slowly; should palpitation come on, he must inspire with one step and expire with the next, a proceeding which, like other 'respiratory gymnastics' of our German friends, is said to make the breathing easier. He may also stand still at every eight or ten steps, and, if necessary, support himself by leaning on a post or rock; but on no account may he sit down until his day's distance has been accomplished.

Such efforts, however judiciously prosecuted, are found to make great demands on the patient's strength, and call for a diet very different from that of the ordinary table d'hôte. Dr. Oertel recommends the following: for breakfast, a cup of tea or coffee, with 150 grammes of milk and 75 of bread; midday, 100 grammes of soup, 200 grammes of boiled or roast beef, veal, game, or poultry, without fat, fish dressed without oil or butter, salad and green vegetables to the patient's fancy, 25 grammes of bread, and farinaceous food or milk puddings not exceeding 100 grammes, a little fresh fruit, but no drink: in the afternoon, 150 grammes of tea or coffee, or at most one-sixth of a litre of water: in the evening, for supper, one or two light boiled eggs, 150 grammes of meat, 25 grammes of bread, a little cheese, salad, or fruit, and for a beverage one-sixth to one-seventh of a litre of wine, with, perhaps, one-eighth of a litre of water. Should so abrupt a change from the patient's ordinary habits prove too trying, some relaxation is granted, and those who suffer from obesity only are allowed a glass of beer at dinner.

Sphygmographic observations are made daily in all cases; and Dr. Oertel alleges that he has restored to the normal some of the most characteristic curves of weak hearts, while patients who at first could scarcely walk on flat ground without panting and palpitation, have been able to perform ascents of the mountains before leaving.

E. F. WILLOUGHBY, M.B.

M. PASTEUR will receive for treatment all persons who have been bitten by a rabid dog.

ARTICLE 5013.

BUNGE ON THE ASSIMILATION OF IRON.

THE success which has attended the treatment of chlorosis with preparations of iron, has led many physicians and physiologists to suppose that the organism possesses the power of synthetically forming hæmoglobin out of albumin and inorganic compounds of iron. Recent investigations have rendered it more probable, however, that the iron given by physicians to chlorotic patients for the purpose of building up and thus supplying the deficient hæmoglobin is not absorbed as such at all; and it has further even been shown by experiments on animals that, when iron salts are directly introduced into the blood, symptoms of poisoning set in, similar to those induced by arsenic.

It therefore becomes a question, how and in what form the necessary iron is absorbed and assimilated under normal conditions; and how the hæmoglobin, of which iron is an important constituent, is built up.

To elucidate this question, Professor Bunge (*Zeitschrift für Physiol. Chemie*, 1885) has experimented with milk and yolk of eggs. Milk must be the material from which the child's hæmoglobin is derived, as for a time it is its only nourishment; while the hæmoglobin formed in the chick during the period of incubation must, in like manner, come from the yolk alone. As the proportion of iron in milk is very small, the investigation can be pursued more readily with the yolk of egg.

If the yolk be extracted with absolute alcohol, a trace of iron passes over into the first extract, because water is still present; but no iron is thus removed subsequently. The iron, therefore, is all contained in the part of the yolk which is insoluble in alcohol and ether, and which forms about one-third of the substance of the dried yolk. This iron is not present as an inorganic salt, or associated with an organic acid, but as an organic combination; for no iron can be extracted from the dry residue by means of alcohol acidulated with hydrochloric acid, even when digested at boiling-point.

The organic iron combination may be thus isolated. The yolk, freed from the white of the egg, is extracted with ether, and the residue dissolved in very dilute hydrochloric acid ($\frac{1}{10}$ per cent.). An opalescent fluid is thus obtained, which is to be filtered and then digested with artificial gastric juice for some time in the cold, but afterwards at about 36° C., when a precipitate containing almost all the iron will be thrown down. It would therefore appear that the iron-holding precipitate has resulted from the splitting-up of a complex combination by the action of a ferment. This precipitate is washed with more of the dilute acid, and then with distilled water, boiled again with alcohol, and finally extracted with ether. It is now to be dissolved up in dilute ammonia, filtered, and the filtrate precipitated with alcohol. In this precipitate is contained the total iron. After repeated washings with acidulated alcohol and ether, a transparent, homogeneous, yellowish-tinted mass is left, which soon dries up, when it is to be powdered and dried, first *in vacuo* over sulphuric acid, and then in an air-bath at 110° C. From 200 yolks 34 grammes of this organic iron combination were obtained.

Now the iron, according to the author, is not present as a salt or albuminate of iron, but as an

organic compound; for it was deposited from a hydrochloric acid solution, and, when it was digested with an alcohol containing 25 per cent. of hydrochloric acid, no trace of iron was extracted, nor was any removed by two days' digestion in a 1 per cent. solution of the acid. In addition, if a drop of sulphide of ammonium be added to a watery ammoniacal solution of the body, not the least coloration is obtained until a considerable time has elapsed. If on the other hand a similar addition of a drop of the sulphide be made to an ammoniacal solution of albumin, containing even a very minute quantity of an artificial iron albuminate, a green coloration is the immediate result.

The body, prepared as described, is very rich in phosphorus, and contains also traces of lime, magnesia, and chlorine; but whether it is really a chemical individual remains yet to be proved. Bunge has, however, given it the name of *hæmatogen*. It would further appear to be probably a decomposition-product of the very complicated molecule constituting the protoplasm of the cell-substance. Without doubt, too, it seems to furnish the material for the building up of hæmoglobin, the iron passing from a loosely to a closely bound condition in the molecule of the latter. The following table shows its relations to nuclein and hæmoglobin.

	Nuclein.	Hæmatogen.	Hæmoglobin.
Carbon.....	40·81	42·11	54·26
Hydrogen ..	5·38	6·08	7·10
Nitrogen	15·98	14·73	17·21
Sulphur	0·38	0·55	0·54
Phosphorus..	6·19	5·19	(0·77 P_2O_5)
Iron.....	—	0·29	0·43
Oxygen	31·26	31·05	20·69

In milk, the iron is similarly combined, and the same holds good with cereals and legumins, for here inorganic combinations of iron are present only in scarcely recognisable traces. Bunge even goes so far as to state that 'our food contains no inorganic iron combinations, the iron present being in the form of complex organic compounds, which are built up by the vital activity of the plant, and that in these forms the iron is absorbed and assimilated, and from them the hæmoglobin originates.'

The question now submits itself, how this view can be brought into harmony with the fact of the increased construction of hæmoglobin which occurs in chlorotic patients under the administration of preparations of iron; for that this building up does really occur, there can be no reasonable doubt. Bunge, nevertheless, affirms that none of the inorganic iron thus administered is reabsorbed for the formation of hæmoglobin, but that the iron used up really comes from the organic iron combinations in the food.

A solution of this apparent contradiction is to be found in the assumption that, in some manner or other, the inorganic iron salts taken as such protect the organic iron combinations of the food from being decomposed in the intestine. Numerous analogies can be educed in support of this assumption; and in complete harmony with it is the undoubted fact that iron preparations are only valuable in chlorosis when given in doses much too great to serve for the supply of the very small proportion of iron required by the organism for the building up of hæmoglobin. This view also harmonises best with the further fact that the derangements of digestion, such as the catarrhal state of the alimentary tract constant in chlorosis, induces processes of fermentation and decomposition therein, and that under their influence it is far from unlikely that such an unstable body as 'hæmatogen' may be decomposed and its iron separated, absorption of undecomposed hæmatogen being only possible in the alkaline chyle low down in the intestine. Accordingly, a great loss would occur before it arrived there. It is, besides, very probable that this decomposition is effected under the agency of alkaline sulphites developed in the intestine, as the result of such fermentations as the butyric, which readily occur on account of the failure in the secretion of the antiseptic hydrochloric acid in the stomach. Nascent hydrogen is generated in consequence, and the sulphates are reduced to sulphites, bodies which exercise a very destructive action on the hæmatogen. But when the inorganic iron salts are present, the sulphites enter into combination with them, and thus the organic iron compounds are saved from destruction.

Agreeing well also with this assumption, are Zander's recent statements that chlorosis can be more effectively and successfully treated by the administration of hydrochloric acid (one to two tablespoonfuls of a 1 to 2 per cent. solution after food), this acid being the normal antiseptic, than by the use of iron itself.

Through this hypothesis it is also possible, in addition, to explain how it is that only in chlorosis are the unabsorbed iron preparations of any avail, and not in other forms of anæmia, in which the cause of the disturbed and perverted blood-formation is situated not in, but outside, the alimentary canal.

T. CRANSTOUN CHARLES, M.D.

ARTICLE 5014.

FRASER ON THE ACTION AND USES OF DIGITALIS AND ITS SUBSTITUTES, WITH SPECIAL REFERENCE TO STROPHANTHUS.

IN the *Brit. Med. Jour.*, Nov. 1885, p. 904, Dr. Thomas Fraser gives a valuable paper, read at the annual meeting of the British Medical Association, on the action and uses of digitalis. The author's remarks not only refer to digitalis, but to various other substances which are included in the digitalis group. The action of these substances is due to certain chemical constituents; the majority not being alkaloids, but substances destitute of nitrogen and termed glucosides. In this digitalis group are included convallamarin and helleborin (which are freely soluble in water), digitalin, antiarin, thevetin, euonymin, adonidin, and oleanderin (which are only slightly soluble in water).

All these substances increase the strength of the heart's contractions, all having a powerful and direct action upon its muscular fibres, and not only upon the heart, but also on striped muscle, wherever it occurs. They are therefore muscle-poisons, when given in sufficient quantity. The action which they produce upon the circulation is followed by various secondary effects. The first of these is an increase in blood-tension. The second is the production of diuresis. A third action is a reduction in temperature; this is occasionally decidedly pronounced, but the members of this group must be placed low down in the list of antipyretics.

The author then proceeds to consider the properties and action of strophanthus (hispidus?), a

plant used in Africa as an arrow-poison. It belongs to the natural order of the *Apocynaceæ*. The seeds are very active, and, when coarsely ground and formed into a paste, they constitute a strong poison. From the seeds Dr. Fraser has separated a crystalline body which he calls strophanthin; it is not precipitated by the ordinary reagents for alkaloids; it does not contain nitrogen; when heated with dilute sulphuric acid, it yields glucose, and a body insoluble in water, but very soluble in rectified spirit; this body is termed strophanthidin. The pharmacological action of strophanthus appears to be a very simple one. It is a muscle-poison. It increases the contractile power of all striped muscles, and renders their contractions more complete and prolonged. It, however, acts on the heart more distinctly and powerfully than on other striped muscles, and it can be administered in doses which produce a distinct effect upon the heart without affecting any other muscles. It increases the systole of the heart, and slows its contractions by small doses. In large doses, the heart is paralysed in a condition of rigid systolic contraction. The author records the results of several cases in which he has administered this drug with marked success, and gives some very interesting pulse-tracings and tables, showing the action of small doses on the secretion of urine. (In 1872 Corville described inœa, one of the active principles of strophanthus, as more subtle in its action than digitaline; *vide Medical Digest*, sect. 393 : 1.)—*Rep.*

RICHARD NEALE, M.D.

ARTICLE 5015.

KOBERT ON GUACHAMACA.

Der Fortschritt (Dec. 5, 1885, No. 23) copies from the *Deutsche Allgemeine Apotheker-Zeitung*, and from the *Pharmaceutische Zeitung*, an original paper by Dr. Kobert of Strasburg. The author writes: The guachamaca plant is considered as highly poisonous at Venezuela. The word 'Guachamaca' was first mentioned in Colonel A. Codazzi's famous geographical work on Venezuela, in which, however, he erroneously identifies the plant with *Ryanea coccinea*.* The first important communication on guachamaca was made in 1862 by Ramon Paéz, in his *Scenes of South-American Life*, in which the author distinctly states that he never saw the plant, but that many a terrible tale of its poisonous properties had been reported to him. For example, people who had partaken of meat roasted on spits of guachamaca wood, died. Birds which swallowed small fish painted with the juice of this plant, instantly dropped dead. A jealous woman poisoned her husband's wine with a few drops of the juice, by which not only he, but also eleven people who accidentally shared it, were killed.

R. de Grosourdy, in his *Medico criollo botanico*, 1864, correctly describes this plant as one of the natural order of the Apocyneæ, calling it Guachamaca toxifera, although he never saw the fruit, and had only very imperfect flowers for examination.

In 1869 the well-known pharmaceutical botanist, Ernst, at Caracas received a branch with leaves and two small rootlets of the plant, which he submitted to A. Frydensberg for physiological examination, who found the root harmless but the branches containing a rapidly fatal poison. Sir Joseph Hooker, from Ernst's description and his report of the physiological properties of the guachamaca plant, declared it to be a *Prestonia*.* Wood, branches, leaves, blossoms, and fruit of the guachamaca plant were shown in the exhibition of the centenary festival of the Sociedad Patriotica de San Fernando di Apure in 1883, from which Ernst perfected his description in 1884. The structure of the plant, however, particularly that of the ripe fruit, proving that this plant is not a Prestonia but a Malonetia, specimens were forwarded to Sir Joseph Hooker, who now definitely identified it as *Malonetia nitida* (Spruce).

The above-mentioned Frydensberg, on further examination of a larger quantity of the plant in 1882, found by experiments that the aqueous extract of the bark paralyses the movements of animals, whilst sensibility remains unimpaired.

The late Charles Sachs, when travelling in 1876 in Venezuela on a scientific mission by the Academy of Sciences of Berlin,† collected a large quantity of the plant, and discovered in it a violent poison, acting like curare. After his death, J. Schiffer (1883), continuing Sachs's investigations, succeeded in isolating, although yet incompletely, a new alkaloid, which possesses all the properties of curare—*i.e.* it paralyses the peripheric termination of the motory nerves, but has no effect on the sensitive nerves and on the muscles. He, however, emphatically points out that this new alkaloid, guachamanine, is not identical with curare, although very similar in action.

Dr. Kobert is of opinion that both poisons will finally prove identical, and that hereby the still obscure question as to the real origin of curare may be somewhat elucidated. It is known that diverse plants, among which those examined by Planchon, are considered to be the genuine source of curare, and that the various sorts of this poison have physiologically very different effects. He recommends as the best curare that supplied by Messrs. Thomas Christy & Co. (155 Fenchurch Street, E.C.), which comes from the Orinoco and Rio Negro, where the Malonetia nitida is not very rare. He states in support of his opinion on the identity of the curare and the guachamanine, that both differ from all other similar alkaloids by their perfect insolubility in absolute alcohol. Both are easily isolated from their tannin-precipitates, and both form characteristic precipitates when treated with phosphate of tungsten. Guachamanine can be employed instead of curarine for all physiological and pharmaceutical experiments, and may, according to Schiffer's trials, prove a more valuable remedy in the treatment of tetanus, rabies, and psychical over-excitement than curarine, by which, besides its being but very rarely pure, only inconstant and variable results have been obtained according to Lehmann's latest experiments in 1884.

FERD. ADALB. JUNKER, M.D.

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* *Ryanea* (De Candolle), of the natural order Flacourtiaceæ or Bixiads.

* *Prestonia* (R. Brown), of the natural order Apocynaceæ.

† Chs. Sachs, first assistant to Prof. Helmholtz, and lecturer (Privat Docent) at the Physiological Institution of Berlin, went to Ciudad de Bolivar for the special study of the electric organs of the Gymnotus electricus (Cuvier), which is found in the lagunes in the vicinity of this town, and published an exhaustive work on this subject, an epitome of which he incorporated into his scientific book on his travels in Venezuela, entitled *In den Llanos*.

Article 5016.

KISLITCHENKOFF ON THE COMPARATIVE ACTION OF THE LEAVES AND FLOWERS OF MAY-LILIES.

As is known, Professor Germain Sée, of Paris, came to the conclusion that the leaves of convallaria possessed a more powerful therapeutic action than the flowers of the plant. If true, his statement might be hailed with satisfaction by all practitioners as well as by hospital administrations, since the green parts of may-lilies are a cheaper article, and their admixture with the flowers would considerably reduce the price of the convallaria preparations, which are as yet valuable in more than one sense. To verify Professor G. Sée's statements, Dr. T. T. Kislitchenkoff (*Russkaia Meditzina*, Nos. 7, 8, and 9, 1885) undertook a series of comparative clinical observations, working at the suggestion and under the guidance of Professor V. G. Lashkevitch, of Kharkov. The leaves were given in an infusion made of one, two, or three drachms to six ounces of water, with half an ounce of syrup, a tablespoonful every third hour; the flowers were administered also in an infusion of one or two drachms to six ounces of water with syrup. The action of these preparations was studied in cases of disturbed compensation in patients with mitral stenosis and regurgitation, and in cases of pleuritic exudation, &c. In some of the cases at first the leaves, then the flowers, of convallaria, and lastly digitalis, were successively used. Infusion of the flowers was tried also in a case of Graves's disease, where the drug brought relief to the agonising asthmatic paroxysms, but did not reduce the increased frequency of the pulse.

From his observations, Dr. Kislitchenkoff draws the following deductions. 1. In small doses (that is, on the use of the infusion of one drachm to six ounces), leaves of may-lilies reduce the frequency and augment the volume of the pulse, and at the same time slightly increase the quantity of urine. 2. In large doses (an infusion of three drachms to six ounces) they produce a considerable increase in the daily amount of urine (*e.g.* from 870 cubic centimètres before the treatment to 3,250 cubic centimètres on the fourth day of the experimentation). 3. The retardation of the cardiac action does not seem to go at an equal pace with the increase in the secretion of urine. 4. The leaves of may-lilies, like the flowers, seem to have no cumulative action on the heart. 5. Cardiac arhythmia may be only somewhat relieved, but not removed, by small and middle doses of convallaria leaves. [In severe cases of disturbed compensation with considerable arhythmia, the author was not able to remove the latter even by the flowers of may-lilies. This is one of the few points in which Dr. Kislitchenkoff differs from Dr. N. P. Bogoiavlensky's views, as stated in his contribution to the pharmacology of may-lilies; *see* his *St. Petersburg Inaugural Dissertation*, 1881, and Botkin's *Arkhiv Klíniki Vnutrennikh Bolezney*, vol. vii., part i., pp. 1–101.] 6. The leaves of may-lilies are better borne by the gastro-intestinal tract than the flowers. 7. A re-established cardiac compensation is kept up by digitalis better and longer than by the flowers or leaves of may-lilies. 8. In regard to the energy of the therapeutic action on the heart, the first place is occupied by the leaves of digitalis; the next, by the flowers of convallaria; and the last, by the leaves of the latter.

V. Idelson, M.D.

Article 5017.

SCHULTZE ON PALPATION OF THE PELVIC ORGANS.

Dr. B. S. Schultze, of Jena, has recently published (*Centralbl. für Gynäk*, Oct. 24), an original communication on bimanual palpation of the pelvic viscera. He had already noted ('Ueber Palpation der Becken,' *Jen. Zeitschr. für Med. und Naturw.*, 1870, v., p. 113) that the contracting and relaxing psoas muscle, along the brim of the pelvis, was an excellent guide to the fingers engaged in detecting the position of the ovary in the bimanual method. External pressure along the same part of this muscle will often, in cases of chronic oöphoritis, or complicated parametritis, cause severe pain, especially when the hand passes over the ovarian vessels and nerves as they cross over the pelvic brim. [*See* reporter's note below, with regard to pressure on the obturator nerve.] When the psoas is kept in a state of clonic spasm, through apprehension of pain or through faulty position of the lower extremities, it may readily be taken for a swelling, the result of pelvic inflammation. As long as the psoas remains relaxed it cannot readily be distinguished by the hand placed upon the iliac fossa, but the pelvic brim can be felt through it. When, however, the patient bends her thigh, the brim cannot be felt through the contracting muscle, which becomes very evident to the touch, and is distinctly tender.

Dr. Schultze finds that two muscles are to be detected on careful vaginal palpation, and to be taken into account as valuable guides to other structures. These are the obturator internus and the pyriformis. [The sphincter vaginæ and levator ani are easy to detect. The anterior part of the latter, when in active contraction, is often mistaken for the former, which lies below it, separated sometimes by a distinct groove. The tendinous arch, whence part of the levator ani takes its origin, can be felt under the lateral part of the vagina; and, by passing the finger forwards towards the anterior bony origin of the muscle, behind the body of the os pubis, the obturator gland can be detected if it be enlarged or inflamed, as in some cases of pelvic cellulitis and gonorrhœa. Vaginismus is very frequently, we find, caused by painful contraction of the levatores ani in cases of fissure of the anus or inflamed hæmorrhoids.—*Rep.*] The obturator internus, Dr. Schultze states, is a muscle generally well developed, and its movements can be felt through the vaginal walls if the patient rotate the corresponding leg outwards. Its contraction becomes particularly evident during extension and adduction of the thigh, when not only its origin around the obturator foramen can be defined, but also the portion lying further back towards the sciatic notch. Pressure on the contracting muscle seldom causes pain, but pressure on the obturator nerve produces sharp crampy pains, radiating to the thigh along the course of the nerve. [This, if misunderstood, may be taken to be symptomatic of some acute inflammatory process in the pelvic cavity. A thorough exploration of the vagina with the finger, in a case of suspected uterine disease, is very likely to involve pressure on the nerve, and this may become a source of fallacy. Pressure on the ovarian plexus must also cause pain even in health, and thus the tenderness is not necessarily a proof (*vide supra*) of chronic oöphoritis.—*Rep.*]

The pyriformis is difficult to detect by vaginal palpation in subjects where the vagina is long, and the pelvis deep. It can easily be touched when the pelvis is shallow and the vagina broad, or in women of diminutive proportions. When the uterus is high up, as in advanced pregnancy, the finger can easily reach the upper border of the muscle. The pyriformis is, according to the evidence of palpation, very irregularly developed in different patients, and it is not so evidently set in action as the obturator, during active rotation outwards of the lower extremity. On the other hand, in many cases it remains in continual contraction, especially when the patient lies in an uncomfortable position, or is in a state of alarm. Pressure on the contracting pyriformis is often intensely painful, possibly ('vielleicht,' *evidently*, might be said with full confidence —*Ref.*) through transmission of the pressure to the sacral plexus. Through these peculiarities the pyriformis may become a prominent source of fallacy. Dr. Schultze, a few years ago, examined a very corpulent patient suffering from chronic metritis and parametritis. He took the two contracted pyriformes for the ovaries fixed to the back of the pelvis.

When both the pyriformes and the obturatores interni are set in action, the bulging of the obturators is most prominent a little behind the middle point of the foramen ovale. As each obturator bulges but little, there is not much chance of its being taken for a tumour or a collection of inflammatory deposit. The most projecting part of the pyriformis in full contraction is much more evident to the touch; it stands out three-quarters of an inch or more from the anterior surface of the sacrum. The inner borders of the two pyriformes in full contraction lie over an inch apart, so that two fingers can be pushed between them in vaginal palpation. The separate bands of fibres can be detected as they arise from the sacrum between the sacral nerves, provided that the muscle be set in action whilst the finger presses in the right direction. If the patient, lying in an easy attitude, have rotated the lower extremity outwards without setting the pyriformes in action, she should be told to hold the thigh stiff. This will set all the femoral muscles in action, and the pyriformes may then be distinctly felt. This will be sufficient to distinguish the muscles in question from a morbid growth or deposit.

ALBAN DORAN.

ARTICLE 5018.

LIEBREICH ON CHOLESTERIN FATS AND ON LANOLINE.

Der Fortschritt (Nov. 1885, No. 22) reports a lecture on the above-named subject, delivered by Professor Liebreich before the Medical Society of Berlin on Oct. 28.

Saponification is the characteristic property of all kinds of animal and vegetable fats and oils without exception, a process by which the separation of the glycerine-ether of the fatty acid into glycerine and the respective fatty acids is brought about. Besides the genuine glycosides, certain animal substances, viz., spermaceti, wax, &c., have long been known; which, although separating into different compounds, behave respecting saponification in a similar manner to the genuine fats. Thus spermaceti, although principally derived from the sperm whale (Physeter macrocephalus, likewise from the Balæna mysticetus), is also found in the coccygeal gland of the goose. Also in the human body compounds of fatty character, *e.g.* protagon and lecithine, have been discovered. To this class, viz., to substances possessing the properties of fats in the physico-medical sense, without being compounds of fatty acids and glycerine-ether, belongs likewise wool-fat. It is obtained now in great quantities from the wool (of sheep) by a peculiar process of washing before its further preparation. Wool-fat is, according to Dr. Hartmann's analysis in 1863, an ethereal compound of certain fatty acids with cholesterin.

The question arose, whether similar cholesterin fats are not more generally found in the animal kingdom, and what is the office of this fat in the organism. Bearing on the first question, human hair, horny tissue of various kinds—*e.g.* feathers of numerous birds, bristles of swine and of hedgehogs —were extracted with chloroform, and examined for cholesterin by means of Liebermann's test. A small quantity of the questionable fat is dissolved in acetic anhydride, and a minute quantity of concentrated sulphuric acid added to the solution, which in the presence of cholesterin fat will assume a bright green colour. By this test, cholesterin fats were found in every kind of keratine tissues.

A further investigation concerned the cause of the presence of cholesterin fats in keratine tissue. The generally accepted view on the office of the coccygeal gland of birds, and of the sebaceous glands of the hair-follicles, is that they serve for greasing the feathers, and particularly the hair, in a similar way to the self-acting lubricator of engines. This explanation, however, is erroneous, the lecturer having proved that the coccygeal gland of the goose does not contain cholesterin fat. Moreover, on examination of the feathers of birds which do not possess coccygeal glands—*e.g.* parrots—in these also the presence of cholesterin fat was demonstrated. Finally, the hair of the sloth (Bradypus tridactylus), an animal entirely destitute of sebaceous glands, was examined, and cholesterin fat was likewise discovered in its keratine tissue. No cholesterin fat having been found in the subcutaneous cellular tissue of any of these animals, the supposition is admissible that the formation of cholesterin fats takes place in the keratine tissue itself.

Of all the cholesterin fats known, wool-fat alone can be obtained at present in sufficient quantities for practical purposes. Its use until lately has been excluded in medicine and pharmacy on account of its impurities, which, apparently, could not be removed. Quite recently, however, Messrs. Jaffé and Darmstaedter, of Charlottenburg, near Berlin, having succeeded in producing it of perfect purity, the above objection against its employment for medicinal purposes has been overcome.

The preparation brought into commerce under the name of lanoline (lanolinum) by this firm is an intimate compound of pure wool-fat with about 30 per cent. of water. It is of yellow-whitish colour, and of the consistency of stiff ointment.

The properties which recommend lanoline as particularly adapted for ointments are these. It readily incorporates water, upwards of 100 per cent. of its weight, and forms thereby a pliable substance of the consistency of an ointment. By mixing lanoline with larger proportions of water, to which a small quantity of soda has been added, a delicate milky emulsion is obtained of unlimited durability, which quality adapts it especially for cosmetic purposes.

Of greater importance, however, is the readiness with which lanoline is resorbed by the skin, which actually soaks up the ointment whilst it is rubbed into it. Lanoline thoroughly incorporating remedies, and introducing them into the tissue, it constitutes a superior material for ointments the absorption of which is aimed at, having besides the advantage of not becoming rancid.

Most successful trials have lately been made with lanoline ointments, among which especially the rapid absorption of mercury gave the greatest satisfaction.

This new material for ointments is prescribed under the name of 'lanoline.'

FERD. ADALB. JUNKER, M.D.

ARTICLE 5019.

HUEPPE ON THE PERMANENT FORM OF THE SO-CALLED COMMA-BACILLUS.

THE following is a translation of a paper contributed by Dr. Hueppe to the *Deutsche Med. Wochensch.*

Up to the present time it has been well known that, under certain conditions, the comma-bacteria may last a considerable time; but it was not decided whether this duration was caused by a special form (a kind of spores), or by the vegetative form of the comma, or by the quiescent form (Ruheform), long known. Conducting examinations in the damp chamber, in which necessary patience and sufficient practice will enable one to avoid any errors, I have found that, in the first instance, if the 'soil' or 'bed' (Nährboden) be exhausted, the vegetative form develops into a quiescent form, the screw-shaped bacillus developing into a thread, which varies very much in length, and has in general the appearance of a screw. But this screw-like shape again is influenced in individual cases by the quickness of formation, by the chemistry of the 'bed,' and also by mechanical conditions of the latter, to such an extent that we find broad and narrow, flexible and stiff screws.

Under a sufficiently high temperature (22° to 27° Cent. = 71°·6 to 80°·6 Fahr.) we find in the thread (sometimes even in the individual comma) a change of this kind. Within a distance equal about to the length of a comma, the comma is divided into two more strongly refracting globular cells, which do not appreciably exceed the diameter of the thread; and then a second or third comma makes its appearance.

In the cases observed by myself the thread was displaced by a swelling of the gelatinous coverings of the globules, so that the globular cells were gradually somewhat separated, so as to form eventually a small zooglœa of regular, globular, and strongly refracting cells

These globular cells or members (I must particularly state) have nothing to do with any forms of degeneration, and just as little do they present any signs of being granular decay, as at one time I believed. I have observed these last named processes, and have established the fact that they are dead and incapable of germinating again. To prevent the possibility of any such mistake being made, I have taken every precaution by comparative examination and direct observation. And it must be borne in mind that I started with the supposition, that a permanent form did not exist. These globular immovable members do not multiply by subdivision, are not coccus-like therefore, but they may germinate again after a latent stage if there come a new supply of nutritive matter. In germinating, the globule extends with a diminution of refractory power into the shape of a bacillus; at first straight, then gradually curving into a comma, which soon multiplies by subdivision. (These observations were made directly on account of the many illusions which were constantly creeping in with the use of coloured preparations for the study of the formation of spores.) These globular cells are formed only when the nutritive matter is exhausted, chiefly after previous development of the quiescent form of the screw-like threads under sufficiently high temperature. They do not multiply in this form, but are capable of introducing fresh generation, and therefore represent a real process of fructification, and must be regarded as arthrospores. There is sufficient warrant from the standpoint of general morphology and biology to recognise in them a permanent form.

The medical faculty are generally accustomed to lay a rather exclusive stress on the first word in the expression 'permanent form,' and give less heed to the word 'form,' in regard of the duration of the endogenous spores of the earth, hay, and other bacilli. This view is authorised to a great extent from the standpoint of the practice of disinfection, but morphologically and biologically it appears one-sided and insufficient, in as far as the question of shape is just as important. Biologically, a permanent form is a protective arrangement (whether appearing as endogenous spores or arthrospores), so that the species may be preserved safely and for a longer period even under the most unfavourable conditions, to which it may be exposed with its spontaneous occurrence, and to which the vegetative and simple quiescent forms succumb. Without doubt this is accomplished by the arthrospores of the comma-bacilli, and I consider them as a form of fructification particularly adapted to conditions present in water and damp earth, in consequence of the gelatinous coverings and accumulation in zooglœa. But even in the one-sided view of the practice of disinfection they are a permanent form, since they are considerably more capable of resisting particularly desiccation than the vegetative comma form, and the quiescent form of screw-like threads. With regard to this last I may just notice, that, having particularly watched the thready condition, I agree with Koch, that after desiccation, lasting several hours, the comma and screw forms die away, and are incapable of germination, and that they cannot outlive desiccation of only a day's duration. On the other hand, after a similar treatment of from one to four weeks (that is so far the extent of my observations) we find the arthrospores capable of germination. Thus, directly compared, the difference between arthrospores on the one hand and vegetative comma forms and the quiescent form of the screw-like threads on the other, is decisive enough, quite independently of the equally important general biological and morphological criteria, to justify me in recognising in this form (regarded by me as arthrospores) also etiologically a permanent form though it may not possess the power of resistance in the same degree as the endogenous spores.

My opinion is thus finally this; that the comma-bacilli (specially in cholera Asiatica) do not only sometimes remain as such a very long time in a vital state, but that under certain conditions a

special permanent form is developed which possesses still greater powers of resistance.

JOHN ELLIOTT.

ARTICLE 5020.

ROSENBACH ON THE INFLUENCE OF STARVATION ON THE NERVE-CENTRES.

DR. P. J. ROSENBACH, house-physician to Professor J. P. Mierzejewski's clinic, has studied (*Vestnik Klin. ce Sudeb. Psikhiatr.*, vol. i., part 2, and *St. Petersburg Inaugural Dissertation*, 1883) experimentally, in dogs and rabbits—1, the microscopic changes occurring in the central nervous system in animals starved to death; 2, the influence of starvation on the excitability of the brain; and 3, the clinical symptoms resulting from the action of starvation on the nervous system.

1. *Morbid Anatomy.*—*a. Spinal Cord.*—The changes wrought by starvation were very marked and constant, though they were almost exclusively limited to the nerve-cells, the cells of the anterior horns presenting the most intense alterations. The latter consisted in 'opaque swelling' of the protoplasm, wax-like degeneration with loss of the processes, granular or hyaline degeneration or disappearance of the nucleus, sieve-like vacuolisation, and complete disintegration of the cell with fatty degeneration of detritus. The longer the animal has lived under starvation, the greater are the alterations found, the lesser is the number of normal multipolar ganglionic elements met at an individual section. All other conditions being equal, the most intense changes are observed in the neighbourhood of the blood-vessels. [That is, the morbid process in starvation follows the general law of spreading of diffuse degenerative processes in the spinal cord, as established by Dr. James Ross, and as subsequently supported by N. Popoff, Tchij, &c.] The cells of the posterior horns undergo the degeneration in a far slighter degree than those of the anterior. The neuroglia and nerve-fibres show only some opacity and swelling. [Like Dr. Mankovsky (*see* the LONDON MEDICAL RECORD, Feb. 1884, p. 73), Dr. Rosenbach never saw anything like 'homogenous degeneration' of the interstitial tissue of the grey matter, as described by Dr. N. Popoff; neither did he see Popoff's 'pigment degeneration' of the ganglionic cells.] The vascular changes are the most marked in sections presenting the most intense degeneration of the nerve-cells, and consist in intravascular accumulation of red and white blood-corpuscles in capillaries and veins; in hæmorrhage *per diapedesin*; and, relatively rarely, in 'plasmatic' or 'colloid exudation' (Lockhart Clarke's 'granular' or 'fluid disintegration').

b. Brain.—In all parts of the cerebral cortex (in the psychomotor area, as well as in the occipital, frontal, and parietal lobes) there are present the same degenerative changes, but they are considerably less pronounced than in the spinal cord. The ganglionic elements in the optic thalami, corpora quadrigemina, &c., present only slight opaque swelling. The white substance everywhere is free from alterations. The circumvascular spaces show marked dilatation, but without any accumulation of leucocytes.

c. Cerebellum.—The degenerative process is localised in Purkinje's ganglia; shrinking of their protoplasm, vacuolisation, and disappearance of the nucleus, being the changes prevalent.

d. Intervertebral and Sympathetic Ganglia.—The same degenerative changes, except hæmorrhage and colloid metamorphosis, are found. The lesions of the nerve-cells in the intervertebral ganglia are so intense, as to create a distinct and characteristic macroscopic appearance. The connective tissue of the structures is somewhat rarefied. The sympathetic (cervical) ganglia present the same alterations, but in a slighter degree.

Discussing the changes above described, the author points out that the same lesions are found in myelitis of traumatic and idiopathic (Leyden, Erb, Hayem, Vulpian) as well as toxic origin [as proved by the following experimental researches carried out under the guidance of Professor J. P. Mierzejewski: Danillo's 'On the Morbid Anatomy of the Spinal Cord in Phosphorus Poisoning,' 1881; N. Popoff's 'On Acute Myelitis from Lead, Arsenic, and Mercury,' 1882 (*see* the LONDON MEDICAL RECORD, Dec. 1883, p. 515); and Tchij's 'On Alterations in the Spinal Cord in Poisoning by Morphia, Atropia, Nitrate of Silver, and Bromide of Potassium,' in the *Meditz. Pribav. k' Morsk. Sborn.*, May and June 1883.—*Rep.*] But, at the same time, there are present important distinctions between starvation on one side, and myelitis and poisoning on the other. In starvation, there is absence of all inflammatory phenomena, such as infiltration of the tissues by leucocytes, formation of 'granular cells,' thickening of the vascular coats, &c., which are always found in myelitis and poisoning. The degeneration and destruction in starvation are nothing but results of a defective nutrition, in consequence of arrested supply of nutritive material. The localisation of the degenerative process is determined by the nerve-cells possessing a comparatively weaker power of resisting any disturbances of the general nutrition.

2. *Excitability of the Brain.*—Having carried out (conjointly with Professor V. M. Bekhtereff) a series of experiments on stimulation of the psychomotor centres in dogs, the author found that, to obtain the minimal motor effect, the strength of electric current must be greater than in the normal (non-starved) animal. In other words, the electrical excitability of the brain is lowered under the influence of starvation.

3. *Nervous Symptoms in Starvation.*—Rabbits did not present any nervous symptoms at all. As to dogs, there were observed some individual differences. Thus, 'stray' or 'street dogs' (or 'no man's dogs'), accustomed to vicissitudes of life and half-starving generally, in the beginning bear a complete hunger-diet good humouredly, and even preserve a cheerful disposition for a pretty long while. Meanwhile, the animals accustomed to good care and regular feeding at first manifest considerable restlessness, whine, and howl. But afterwards all starved animals become quieter and listless, lie motionless, and do not even touch any food put before them. Dr. Rosenbach did not see anything like delirium or hallucinations of inanition, except in one case, where the animal gnawed off a part of its paw in the last day of its life.

V. IDELSON, M.D.

WE understand that Messss. Maclachlan & Stewart are about to publish a collection of the songs and verses by members of the well known Medical Clubs in Edinburgh, many of which are familiar to the outside public as well as to the medical profession.

ARTICLE 5021.

KRASKE ON TUBERCULAR INFECTION OF WOUNDS.

IN a recent contribution to the *Centralbl. für Chirurg.*, 1885, No. 47, Professor Kraske, of Freiburg, reports two cases by which he has been led to believe that, under certain conditions, a fungous affection of wounds may occur in the absence of any pre-existent tubercular disease. It is well known, Kraske points out, that, after operations for the removal of tubercular disease, the resultant wounds or scars very often become fungous. This local relapse of tubercular disease is usually attributed to a failure in the previous operation to remove the whole of the diseased structures, so that the granulations of the wound, or the scar, may become infected by a remnant of the primary deposit. Such infection, it has been held, does not occur if the operation be performed on sound structures, as in amputation for tubercular caries, nor has any decided case previously been recorded of fungous infection of the wound from an operation performed for the removal of non-tubercular disease, or of like infection of an open surface due to injury, even though the subject in either case might be disposed to tuberculosis.

The first of the cases recorded here by Kraske is one of a lad, 11 years of age, who came under treatment for swelling, with fistulous openings, near the upper end of the right femur. The patient, though pale and emaciated, did not present any glandular swellings externally, and his internal organs were found to be quite healthy. The case, in Kraske's opinion, was one of simple osteo-myelitis and necrosis following an attack of fever, supposed to have been typhoid, which had occurred two years previously. The parents were quite healthy, but it was reported that a sister of the patient had been suffering from pulmonary phthisis, which afterwards proved fatal. An incision having been made through the soft parts over the diseased bone, a large cavity was opened, which was lined by granulations, but did not contain any sequestrum. The inner surface of the cavity was carefully scraped, and the seat of operation treated antiseptically. The patient was soon discharged as convalescent, but, after an interval of seven months, again came under treatment, and then presented an increased number of fistulous openings near the great trochanter, from which there was a discharge of serous fluid, and which led down to bare and rough bone. The fistulous canals having been laid open, much carious bone and unhealthy granulation-tissue were exposed. Caseous deposit was found both in the granulation-tissue and in the spongy substance of the bone; and the tuberculous nature of the process was proved by the presence under the microscope, in both these structures, of miliary tubercle with giant-cells, and also of bacilli.

The subject of the second case was a lad, aged 10 years, who, about eight months after an injury of the left thigh-bone, followed by much fever and suppuration about the seat of injury, came under treatment for distortion and shortening of the injured limb, and osteo-myelitic (?) necrosis of the femur. There were two fistulæ, one on the outer, the other on the inner, surface of the thigh, each leading down to loose sequestra. The integument around the fistulous opening on the inner side had a livid tint, and was very thin and much undermined; and the channel, when slit up, was found to be lined for about an inch of its extent by fungous and caseated granulations, which revealed under the microscope the presence of the micrococci of tubercle. The walls and outer orifice of the other fistula were in a normal condition. The patient, though found to be free from visceral disease, was very pale, and gave a decided history of pulmonary tuberculosis in many members of his family.

The primary disease in each of these cases Kraske holds to have been acute infective osteo-myelitis. To suggestions that might be made of error in diagnosis, and of the possibility of the disease having been from the first tuberculous, it is answered, with regard to the former case, that the affection of the upper part of the femur had taken an acute course, and been early associated with very severe symptoms, both general and local; and that the local conditions, when the patient was first seen by the author, were very characteristic of simple necrosis from osteo-myelitis, and afforded no indications of tuberculosis. The history of the second case was one of simple necrosis from acute traumatic osteo-myelitis of the shaft of the femur. The appearance of the fistula on the inner side, with the undermining of the skin, and the caseous and swollen granulations, might have suggested that this was a very rare and, indeed, previously unheard-of instance of tuberculosis of the diaphysis of a long bone, commencing with high fever and suppuration, and resulting in the formation of sequestra and spontaneous fracture of the affected bone. The granulations lining one sinus and enclosing the sequestra were quite healthy, and the sequestra themselves were composed of hard and unaltered bone-tissue. No tubercle-bacilli could be found in these structures on the most careful examination, whilst in the spongy and caseous granulations of the sinus on the inner side of the thigh, these micro-organisms could be observed without difficulty. On consideration of all the clinical details of these cases, Kraske holds it as certain that in each the tuberculous wound-infection was established in tissues which had previously been quite unaffected by any tuberculous process.

With regard to the way in which the infection occurred in these cases, Kraske holds that the primary seat of the tuberculous disease in each instance was the outer open surface, and not the bone. This is indicated by the local conditions observed in the second case, in which only the more superficial part of one sinus was diseased. Inoculation of the tubercle-bacilli on an open surface, it is stated, is not only possible, but of frequent occurrence; a tuberculous subject being capable of infecting himself, and also some other and a previously non-tuberculous individual. In large wounds, however, such inoculation rarely takes place, as the intensity of the reactive and the reparative tissue-changes after severe lesion are unfavourable to the development of the tubercle-germs. In the first of Kraske's cases there is a history of very favourable conditions for the inoculation of the virus of tubercle from without. The lad was the constant companion of a sister who was dying from pulmonary phthisis; both patients were nursed by the mother, and the dressings applied to the openings in the thigh were kept in the room which they both occupied. In conclusion, it is suggested that, in subjects predisposed to tuberculous disease, the general or local changes in tissues and circulating fluids, excited by osteo-myelitic infection, may favour the development of the tubercle-virus in the resulting open surface.

W. JOHNSON SMITH.

ARTICLE 5022.

SOKOLOFF AND ULEZKO ON THE STRUCTURE OF THE PANCREAS.*

MR. VASILY SOKOLOFF, soliciting the degree of 'magister of veterinary sciences,' selected for his inaugural work the study of the minute structure of the pancreas during its rest and action (*St. Petersburg Inaugural Dissertation*, 1883, pp. 48; and the *Arkhiv Veterinarnykh Nauk*, Dec. 1883). The structure of the quiescent gland was examined in dogs, cats, rabbits, horses, cows, sheep, and pigs. To study the alterations taking place in the gland during its physiological action, he killed dogs, cats, and rabbits at certain periods (4, 5, 7, 10, 15, 20, 40 hours) after the ingestion of food or after a subcutaneous injection of pilocarpine. The specimens were hardened in chromic acid, spirit of wine, tincture of iodine, osmic acid, muriate of gold, and Müller's fluid, and then stained with hæmotoxylin or picrocarmine. The results of these investigations (carried out in Professor F. N. Zavarykin's laboratory) are summed up by the author as follows.

1. The changes in the structure of the pancreas during its action, show that the process which takes place in it is identical with that observed in other glands of similar anatomical structure and function (salivary, pepsine glands, &c.).

2. During its physiological rest, the secretory cells become granular and increase in their bulk ('as if swell'), their homogeneous zone being considerably diminished, or disappearing altogether.

3. When the pancreas steps into the physiological action, the cells in which the homogeneous zone has disappeared, or is present only in the shape of an extremely narrow marginal strip, undergo disintegration, while the remaining cells show a diminution of the granular, and an increase of the homogeneous zone.

4. At the same time, on the periphery of the alveolus there appear small homogeneous wedge-shaped cells, which are gradually lodged between the former elements, and which replace the secretory cells destroyed. [They are identical with Podvysotzky's 'cuneiform cells,' though viewed by Sokoloff in a different light. (*See* the LONDON MEDICAL RECORD, April 1884, p. 180.)—*Rep.*]

5. Simultaneously, there appear round corpuscles in the interstitial tissue of the gland.

6. These round cells (leucocytes), probably, serve as a source from which the homogeneous cells in the alveoli are originated.

7. Therefore, the destroyed secretory cells, to all probability, are replaced by new ones, which are developed from leucocytes wandering in the glandular interstitial tissue. So far Mr. Sokoloff.

In a preliminary note in the *Vratch*, No. 21, 1883, p. 323, Dr. Klavdia Ulezko opposes him from the beginning to the end of the matter, pointing to the results of her own investigations conducted in the laboratory, and under the guidance, of Professor M. D. Lavdovsky. Her statements may be given thus.

1. No destruction of the secretory cells ever takes place during the physiological action of the pancreas (as well as of the salivary glands, as proved by Professor Lavdovsky in opposition to Professor Heidenhain).

2. Hence, generally, there is no occasion to look about for any substitutes for the pancreatic secretory cells in relation to the regeneration of the latter; this would be the more superfluous, as the secretory cells are capable of proliferation themselves (as was first proved by Gaule).

3. No grounds whatever may be adduced in support of Sokoloff's views concerning the regeneration of the pancreatic cells from leucocytes. The active condition of the gland does not stand in any connection with migration of leucocytes. The latter—as far as the normal gland is concerned—are present only in too scanty numbers to be taken into any account. No transitory forms or links between leucocytes and the secretory cells are (or could possibly be) observed. Sokoloff's 'homogeneous cells' are, probably, best explained by some defective methods of examination.

4. Podvysotzky's 'cuneiform cells' have no relation whatever to leucocytes, since they are nothing but artificial products.

[Miss Ulezko's paper gave rise to rather sharp polemics between Mr. Sokoloff and Professor Lavdovsky (*see* the *Vratch*, No. 26, 1883, p. 412; No. 28, p. 442; No. 43, p. 684; and No. 45, p. 714); both of the parties ultimately remaining there where they had been previously.—*Rep.*]

V. IDELSON, M.D.

* SOKOLOFF, VASILY.—On the Pancreas in the Various Phases of its Action. (*St. Petersburg Inaugural Dissertation*, 1883, pp. 48, with 2 Figs.; and the *Arkhiv Veterinarnykh Nauk*, Dec. 1883, pp. 133-178). ULEZKO, KLAVDIA.—On the Structure of the Pancreas during its Physiological Rest and Action. (*Vratch*, 1883, No. 21, pp. 323-4.)

ARTICLE 5023.

DRAPER ON DEATH BY DROWNING.

DR. DRAPER, Assistant Professor of Legal Medicine in Harvard College, in a paper read before the Massachusetts Medico-Legal Society and reported in the *Boston Medical and Surgical Reporter*, postulates that the discovery of a dead body floating in the water or cast upon the shore presents to the medical examiner four problems for his solution; 1. The identification of the person dead; 2. The cause of the death; 3. The manner of the death; 4. The interval since death.

He discusses these topics briefly, in the light of his own observations during the past eight years. This experience has had as its material the personal inspection of 149 dead bodies rescued from the harbour, river, and other open waters abounding in Suffolk county, or cast upon the land after having been in the water, or found in tanks, privy-vaults, bath-tubs, and the like, after domestic submersion. Of this number, 124 were males, and 25 were females. All ages were represented, from the new-born infant, at one extreme, to the melancholy veteran of seventy-five at the other; but nearly all were under fifty years old. As would be expected, the influence of season showed itself in the fact, that a majority of the inspections occurred between May and November; the deaths predominating then, because accidents incidental to bathing and sailing are then most common, and because the bodies of persons perishing by submersion during the winter months appear subsequently for the first time when the ice has gone, and putrefaction brings them to view as the warmer days approach.

The first question which confronts the medical examiner when he is called to view a dead body recovered from the water is, 'Who is this person?

Occasionally it is a question of much difficulty and requires considerable attention. Like other floating material, a dead human body may be borne upon a stream or by the tide many miles from its point of departure, and identification may thus be rendered increasingly difficult by distance. In March 1879, a boy was accidentally drowned in a creek in Waltham; twenty-seven days later his body was found on the South shore of the Charles River in Boston, ten miles from the scene of the drowning. Again, time is an element of importance in facilitating identification. Putrefactive changes speedily destroy the facial characteristics, and render recognition by the features impossible. But, fortunately, these cases which have to be recorded as 'unknown' are very few. The friends of missing persons are on the alert to see all dead bodies which the newspapers announce to have been found, and generally the clothing and personal effects afford a ready means of identification. Of the one hundred and forty-nine dead bodies forming the basis of this paper, only twelve were buried unidentified, leaving out of the account the bodies of new-born infants thrown into the water after premature birth or still-birth.

Sometimes attention to seemingly trifling details in the description of dead bodies and their clothing is repaid by speedy and positive identification. For example, on one occasion, the dead body of a labouring man, accidentally drowned in the course of a drinking bout, was recovered after many days in a thoroughly decomposed condition. Into the published description of the clothing Dr. Draper inserted the small matter that one of the shoes was laced with an ordinary shoe-string, while the other was provided with a piece of white cotton twine as a lacing; this peculiarity attracted the notice of the dead man's relatives, and led to the prompt recognition of the body. In another instance, a woman's body was brought to the morgue; on her back was a square of belladonna plaster, marked on the outside with the letter and number of a hospital bed and ward; this therapeutic clue served readily to establish the identity. The value of clothing as a means of identification was illustrated, in a negative way, in a case of a man whose body was forced by the tide under one of the wharves which skirt the city's water front; the body was nude, and, though a full description of its characteristics was published, and a sufficient time and opportunity were allowed for its inspection, no one appeared who was able to state the name and home of the unfortunate bather.

But the really important question for study is the purely medico-legal problem—the *post mortem* diagnosis of death by drowning. When a dead body is found in the water, the presumption is that the water was the cause of the death, and that the person perished by submersion. To verify or refute that presumption by an inspection and necropsy of the body is, under some circumstances, a most responsible and delicate duty. The question is sufficiently easy and simple, if the death have been recent and the body present none of the changes due to putrefaction; it is difficult, and presently becomes impossible of solution, in proportion to the advance of cadaveric decomposition.

Upon a body twenty-four hours after death by drowning, the demonstration of fatal asphyxia by submersion is a satisfactory medico-legal study, with rare exceptions; twice twenty-four hours later, the most valuable and trustworthy signs may have wholly retreated before the skirmish-line of putrefaction. That these fortunately fresh bodies constitute a small fraction of the material offered to the medical examiner for his investigation, the experience of all readily attests. Commonly, he is confronted with the hideously inflated, horribly distorted, nauseously infected cadaver, whose stench fills our nostrils and our memories for many days; or he sees, with any other than the æsthetic sense, the remnant of mortality rescued from the sea, the skull bereft of its natural covering, the eyes long ago gone from their sockets, the nose and the lips likewise departed and exposing a grinning display of teeth, the hands, like the other accessible soft parts, appropriated by the fishes for nutritive purposes; but the clothing and every pocket and fold thereof alive with all manner of skipping and wriggling and slimy marine parasites, rendering a faithful search for the 'money and other valuables' mentioned in the law a critical test of the medical examiner's zeal. Such subjects, vulgarly called 'floaters,' may well lie under the presumption that they died in and by the water from which they were taken, unless an obvious external lesion, like a pistol-shot wound or a fracture of the skull, be observed upon the body and lead to another course of inquiry and to the demonstration of another cause of death.

What, then, asks Dr. Draper, are the *post mortem* appearances which the examiner may rely upon for a diagnosis of death by drowning? In the first place, what external indications are of value, assuming that the body under inspection is that of a person who, in drowning, came to the surface at least once before final submersion, that the interval since death is brief, and that the recovery from the water was but a little time before the examination?

The sign which he regards as of the first importance, superior to all others, is the presence of froth at the mouth and nostrils. When it is present in its typical development it affords, in his belief, sufficient evidence to establish by itself the cause of the death. It is to be distinguished from the coarser gaseous bubbles which putrefaction brings to view at the lips, and which the old women who 'lay out' corpses note with interest; it is fine, light, and delicate, like the foamy lather of the best shaving soap. Sometimes it has a pink tinge, and occasionally a distinctly marked red colour, from the blood which has become intimately mixed with it in the course of its formation in the air-passages. It is found after drowning in any kind of fluid and under all circumstances (with the possible exception of cases in which the person drowning sank immediately without once returning to the surface for air, although of this exception some excellent authorities express doubt). Dr. Draper has seen it very fully developed in the case of a child who was drowned in a privy-vault. It is a very evanescent sign, and may not be expected after an interval of four days after death in winter, and of sixty hours in summer. Its appearance externally is due to its escape and overflow from the trachea and bronchi, where its primary formation occurs.

The colour and condition of the skin are of interest. In the recently drowned body, promptly recovered from the water, the condition of the skin, so far as lividity is concerned, is not remarkable over regions situated below the clavicles; the face is either deeply injected so that it presents a mottled purplish colour, with marked reddening of the conjunctivæ and engorgement of the ears and lips, or

there is a dull sodden lividity ; or, not uncommonly, there is the same pallor which characterises the rest of the body. Whatever the hue may be at the outset, it does not persist, but a significant change presently occurs. After an interval varying from a day and a half to four days (or even later in winter), the face, without being swollen, as at a later stage when decomposition is fully in progress, assumes a uniform dull red or copper colour, not mottled or in streaks, but equally distributed. Ogston explains this change as arising from the action of the oxygen in the air or the water, but the precise nature of the process he does not make clear. A little later, but long before the rest of the body, protected by the wet clothing, shows any alteration, the face becomes swollen and distorted, the lips protrude, and the eyelids are distended, in consequence of the advance of decomposition.

Cutis anserina, though generally observed upon the bodies of the drowned which have come under Dr. Draper's inspection, has, in his belief, very little diagnostic value. Its presence indicates a vital reaction in the skin, but not necessarily caused by contact of cold water with the skin. Casper* ascribes its formation to mental shock rather than to the effect of cold on the body, and he states that he has observed it upon those drowned in the heat of summer, and frequently, also, upon those who have died otherwise than by drowning, though by violence, as by shooting, hanging, stabbing, falls, and the like.

The blanching and wrinkling of the skin of the hands and feet and knees, formerly set down as among the signs of death from drowning, are now recognised as simply the physical effect of water upon the cutaneous tissues, whether living or dead.

Dr. Draper has not observed that important sign of drowning — the presence of substances grasped in the hands. Where this evidence exists, it is unquestionably a very valuable aid to diagnosis, providing the matters found in the hands be identical with those growing or floating in the water, and provided, also, the grasp of the hands upon these substances is the grip of cadaveric spasm indicating a vital act. The same rule holds here as in other cases of instantaneous rigidity : the closure of the hand upon its contents must be more than a mere flexion of the fingers ; it must be a true death-grip to give it value as a *post mortem* sign.

The situation of the tongue is insisted on by some authors as important, and the examiner is advised to note whether it is engaged and more or less protruded between the teeth, or is in its normal place. In nearly every instance in which Dr. Draper has recorded a note on this point, the tongue has been observed in its normal relation to the teeth : in a few cases its tip has been found engaged between the teeth, and sometimes it has been swollen and closely apposed to the palate. He has never seen it protruded between the lips.

The appearances which the internal examination reveal are as follows. Upon raising the sternum, after the primary longitudinal incision, the increased volume of the lungs at once arrests attention. The organs are fully expanded so as almost to conceal the pericardium. They do not retract when the sternum is lifted, but they bulge forward into, and, to some extent, through the exposed space. This appearance is described by Casper as 'truly thanatognomonic,' and he explains it as 'in part an actual hyperæmia in consequence of very violent inspiratory acts carried on at the momentary emergences of the head of the drowning person above the surface of the water, and partly (and chiefly), in consequence of the inhalation into the lungs of the fluid in which the drowning has occurred.' Dr. Ogston has attributed this condition to the presence of water or watery fluid in the pleural cavities ; and the protrusion of the lungs is caused, in his opinion, by the buoyant organs floating above this fluid when the controlling pressure of the sternum is removed. This does not seem to Dr. Draper to be an adequate explanation, since in many cases in which he observed the appearance to a marked degree, the amount of fluid in the pleural cavities was small, wholly insufficient, indeed, to float the lungs.

To the touch, as well as to the sight, the lungs present characteristic indications. They feel like œdematous tissues, pitting on pressure. They show sometimes the oblique impress of the ribs.

Careful inspection discovers the air-vesicles to be fully distended at the surface of the organs, and quite extensive areas of ruptured cells are sometimes seen under the pleura, as in emphysema.

The external colour of the lungs is not uniform, according to Dr. Draper's observation. Sometimes the organs are of a pale grey colour, both anteriorly and posteriorly ; more frequently, hypostatic reddening is seen, the anterior parts remaining pale. In other cases, where the subject is plethoric, the entire pulmonary surface has a red or purplish hue. Much, he assumes, depends on the individual habit, on the interval since death, and on the position of the body in the interval. He remembers one case which illustrates the influence of blood-supply. A woman committed suicide by drowning while in a condition of melancholia, induced by the progressive growth of uterine fibroids, which she regarded as incurable. They had caused repeated and profuse hæmorrhages, so that at the time of her death she was very anæmic. The lungs presented, on *post mortem* examination, a singularly pale appearance throughout ; the amount of blood in the body being insufficient to give to those organs any marked reddening, either superficially or upon the cut surface.

In the majority of his cases Dr. Draper has observed punctate subpleural ecchymoses, generally few in number and situated in the lower part of the lungs, and most frequently in the fissures between the lobes. They vary in size, the largest scarcely exceeding the size of a millet-seed.

Upon section, the lungs almost invariably show clear indications of death by submersion. These indications include a more or less intense reddening of the pulmonary tissue ; the abundant saturation of the lung with fluid which escapes, as in œdema, on the slightest pressure from the entire cut surface ; and the presence of froth and fluid in the air-passages from the trachea onward to the smallest bronchioles. In a few instances, he has found sand or mud in the trachea and larger bronchial branches. When the body has been recovered early from the water he has regarded these evidences of the penetration of water and other foreign matters into the respiratory passages as valuable diagnostic indications ; but the interpretation of these appearances as signs of vital acts, should, in his belief, be guarded, since it is known experimentally that water may penetrate the ultimate structure of the lungs when a dead body is left sufficiently long and

* *Handbook of Forensic Medicine* (Sydenham Society's Edition), vol. ii., p. 234.

in a favourable position in the fluid. But if, with the water, he has found in the air-passages, the fine, foamy froth previously described, he has not been left in doubt concerning the cause of the death, since it is impossible to explain the formation of this product in any other way than by the violent respiratory acts of the person submerged ; it is a sufficient proof that the body, now dead, was alive when it entered the water.

The heart has almost constantly been found in a condition indicating death by asphyxia ; its right cavities have been filled with blood, its left ventricle being generally contracted and empty. The condition of the heart in this respect was in harmony with the hyperæmia of the lungs usually present and due to the same cause.

The blood has always been found of a dark colour, and generally of fluid consistency. In rare instances, Dr. Draper has observed clots in the right ventricle, but they were small, ragged, and soft.

The appearances about the abdominal group of organs he believes to be of slight diagnostic importance. The vessels of the peritoneum and mesentery are generally found fully injected, and there is engorgement of the spleen, kidneys, and liver, consistent with the asphyxia, which was the predominant factor in the cause of the death.

The presence of water in the stomach has been deemed by some authors a sign of much value in the determination of death by drowning, indicating that the fluid was swallowed in the course of the submersion. When the stomach contains water or other fluid or material identical with that in which the body was found (a matter sometimes of difficulty to determine), it is clearly a very trustworthy evidence, since we know experimentally and upon good anatomical and physiological grounds that water does not penetrate to the stomach of the dead subject, and, hence, that its presence there is a proof of vital action. Thus, when salt water, or dock mud, or bits of seaweed are found in the stomach, a good confirmatory sign of death by drowning is recognised. But the examiner is not always fortunate in discovering this sign ; in many of Dr. Draper's cases, the stomach has been found either empty or containing food with very little fluid. In one case of suicidal drowning, a pint and a half of quite clear water was noted ; in another case, twenty fluid ounces of watery fluid, mixed with mud, betokened the act of swallowing in the course of drowning. Where drowning occurs in clear fresh water, it would require a very nice discrimination to set aside the possibility that the water contained in the stomach had not been voluntarily taken to satisfy thirst a short time before the submersion.

In about half of Dr. Draper's cases, he has observed a marked injection of the meningeal vessels and appearances indicative of hyperæmia of the brain ; but he has not regarded this as among the more reliable guides to a *post mortem* diagnosis, since cerebral congestion may result from many conditions immediately antecedent to drowning, but wholly independent of that act.

In summarising the various anatomical proofs of death by submersion which his experience and study have taught him to regard as most trustworthy, Dr. Draper states them thus. They fall naturally into two groups ; namely, those indicating the generic cause of death (asphyxia) and, secondly, those especially showing that the death was by submersion. Of the former class of signs, the distended right cavities of the heart, the engorged lungs, the subpleural punctate ecchymoses, the evidences of hyperæmia in the liver, spleen, and kidneys, and to some extent also in the brain and its meninges, the reddening of the tracheal and bronchial mucous membrane, the dark unoxygenated colour and the fluid condition of the blood, readily occur to mind as almost uniformly present. Of the second or specific group of proofs that the asphyxia was the result of submersion, the following are the more important : froth at the lips and nostrils and in the trachea and bronchi ; water in the bronchi, either with or without mud and other foreign matters ; extreme distension of the lungs ; superficial pulmonary emphysema ; water in the small bronchioles and in the vesicular structure, as shown on the free escape of the fluid from the cut surface of the lung ; thin clear fluid in the pleural cavities ; water, particularly muddy water, in the stomach. As confirmatory signs are mentioned *cutis anserina* ; the presence of objects held firmly in the hands and clearly derived from the water in which the body was found ; blanching of the skin of the palms and soles ; marked lividity of the face, with injection of the conjunctivæ.

Close upon the determination of the cause of the death, follows the scarcely less important medico-legal question, its manner. Was the life destroyed with suicidal purpose, or by homicidal violence, or was it lost accidentally ? It must be admitted that the solution of this problem is in great measure a police rather than a medical matter. The phenomena of drowning do not differ materially whether their subject falls into the water, or jumps in, or is pushed or thrown in ; and the anatomical appearances, both internal and external, are not susceptible of differentiation from that point of view. The material circumstances of the death, upon which almost wholly a decision concerning its manner must rest, though falling outside a strictly limited medical examination, may nevertheless come to the medical examiner's knowledge through the statements of eye-witnesses ; or they may be inferred with sufficient accuracy from the condition of the body when found. Thus, the discovery of a naked body in the water, in summer, leaves little doubt that accidental drowning occurred while the person was bathing ; while suicide is reasonably to be inferred when the examiner's search through the clothing is rewarded with the discovery of stones or other heavy objects in the pockets, or when he finds, as in one of Dr. Draper's cases, a flat-iron tied to one of the ankles. Homicidal violence by drowning is a more difficult matter. It is true that this form of homicide is of the rarest possible occurrence, and that the chances that death in any given case was either by accident or suicide greatly preponderate ; yet the examiner should not allow himself to be misled by the doctrine of chances, but he should be on the alert perpetually for evidences of crime. These evidences, so far as the anatomical appearances go, are to be found in the presence of lesions indicating resistance. But there is need of caution even here, as one or two illustrations may serve to show. In one case to which Dr. Draper was summoned, the body of a German brewer was found in a large tank in the basement of a brewery ; entrance to this reservoir was possible only through a chute or shaft, about two feet square, leading from an upper storey. The body showed unequivocal indications of death by drowning ; but in addition, there were contusions upon the face and scalp, not easily to be explained by

the fall through the shaft. It would have been easy to entertain the theory that the man had become engaged in a quarrel with one of his fellow-workmen, and had been thrown down the shaft into the water when disabled by blows on his head. But investigation demonstrated that the ecchymoses about the head were the result of blows received two days before death in the course of an altercation in a beer-saloon, and letters were found which indicated that the mortification growing out of the punishment which he had received from his opponent was one of the incentives which led the man to drown himself. In another instance, the body of a man was found floating in Charles River. At the inspection, Dr. Draper found behind the ear a contused wound of the shape of the letter H, the longest part of the wound measuring an inch and three-quarters, and its deepest part penetrating to the skull. It was such a wound as a blow with a rough stone or some similar weapon could have made, and its appearance clearly indicated that it was received before death; the skull was not fractured. The other anatomical appearances were those of death by drowning, and the inference was reasonable that the man might have been assaulted, struck heavily on the head, and thrown into the water while incapable of resistance. For a month, the man's identity remained unknown; and thus the facts relating to his death were also hidden. But, at length, the woman with whom he had lodged identified his clothing, and stated that two days before his body was found he had come home late at night, very drunk, with his head wounded and bleeding, and his clothing stained with blood, appearances which were caused (according to his story) by his falling down some stone steps. It was learned that, in the course of his latest inebriety, he was discharged from his usual place of work, and the fair conclusion was that, being out of money and out of employment, he destroyed himself in the despondency resulting from his financial and alcoholic misery.

Thus the signs of violence are not to be hastily interpreted. Moreover, the additional caution is to be borne in mind that, under certain circumstances, wounds found upon the bodies of the drowned are the results of injuries received by striking upon jutting rocks or upon bridge-timbers, or were produced upon the dead body in the efforts to recover it from the water. On the other hand, it is not to be forgotten that the entire absence of marks of violence upon the body of a person drowned is not inconsistent with the fact, otherwise established, that the death was by homicide:—a man overcome suddenly by more than one assailant, and by garrotting made incapable of self-defence; a woman similarly overpowered by muffling her head in a shawl to stifle her cries; a child without any such preparation for a violent death—all these might easily be tossed into the water, and their dead bodies would reveal to the medical examiner the signs of death by drowning only.

Among the cases of accidental or suicidal drowning that have come under the notice of Dr. Draper one or two deserve a word on account of their peculiarities. A man, in low spirits as the result of intemperance, tried ineffectually to obtain a supply of laudanum one midnight under false pretences, and in the morning was found dead in his bath-tub, with only his underclothing on his body, and with his head immersed deeply in a pail of water in front of which he was kneeling. A child, two years old, was left alone in a room in which was a large butter-tub containing five inches of water; after five minutes' absence, the mother returned to find her child head downward in the tub and dead by drowning.

Of the one hundred and forty-nine cases which have supplied the basis of Dr. Draper's paper, ninety-two were cases of accidental drowning; and of these ninety-two, twenty-one were bathing casualties, chiefly among boys under fifteen years old. The sudden and furious tempest of July 16, 1879, occurring while many pleasure parties were sailing in the harbour, yielded thirteen of these victims of accidental drowning.

A common and natural question addressed to the medical examiner as he stands over a dead body just brought to land, is 'How long has this body been in the water?' Certain writers on legal medicine declare their ready ability to determine this problem by means of the phenomena of progressive putrefaction which the body presents. Dr. Draper says that he has studied this point with considerable care, and confesses that the practical fruits of his study are unsatisfactory. The question cannot be answered with any degree of precision, except within very narrow limits. In a case of death by drowning, the circumstances of which are wholly conjectural at the time of the inspection, one can say with sufficient confidence, this death occurred within twelve hours, or yesterday, or the day before yesterday; but Dr. Draper contends that one is using his guessing privileges unscrupulously when he tells the reporters, with an affectation of candour, that the drowning occurred a month ago, or six weeks ago, or ten days ago; he really does not know, and cannot know with the anatomical appearances as his only guide. He offers one or two instances in illustration. Among the victims of the gale above mentioned were three men, of nearly the same age and physical condition, and, so far as is known, exposed to identical *post mortem* influences; two of the bodies were recovered July 27, eleven days after the storm, and the third was brought ashore two days later; in all three of these the appearances were the same as Devergie describes as proper for dead bodies recovered three and a half months after submersion, the most striking feature being the entire loss of the soft parts from the skull and from the hands. In another instance a party of young men were sailing May 30, 1883, and two of their number, H. and B., aged 20 and 21, were drowned by the swamping of their yacht; the body of H. was recovered June 21, and that of his comrade came ashore June 22, or, respectively, twenty-two and twenty-three days after death. In the case of H., all the soft parts of the head and face were cleanly removed, and both hands were gone; while in the case of B., besides the loss of both hands, the head was missing and the cervical vertebræ were as clean as if they had been macerated and artificially articulated; the skin of the abdomen was adipocerous. These examples serve to teach caution; they recall the fact that the problem is not a simple one, and that, if the processes of putrefaction have begun their work upon the body under inspection, a considerable degree of reserve is requisite in its answer. These views are in harmony with Casper's observations touching the conditions 'of which, as yet, we know nothing,' which modify the advance of decomposition, and the case which he cites to demonstrate this is sufficiently convincing. 'On March 20, 1848,'

he writes,* 'I examined the bodies of fourteen, almost all of the same age, 24 to 30 years, previously occupying the same social position, all lying together in the same part of our dead-house, who had all met the same death, having been shot on the barricades on March 18, and had all died at the same time. Here there certainly existed those identical conditions so necessary for instituting a comparison, and yet I can testify that in no one case did the signs of putrefaction resemble those of another.' With such an authority to teach moderation, Dr. Draper observes that it well becomes us to avoid dogmatic assertions about matters of uncertainty.

ARTICLE 5024.

CHITTENDEN AND SMITH ON THE DIASTATIC ACTION OF SALIVA, AS MODIFIED BY VARIOUS CONDITIONS, STUDIED QUANTITATIVELY.

FERMENT action plays such an important part in the chemical processes occurring in the animal body, that a precise knowledge of the conditions that are favourable or otherwise to its activity must necessarily be of great value from a physiological point of view. This paper, by Prof. R. H. Chittenden and H. E. Smith (*Trans. Conn. Acad.*, vol. vi., March 1885) forms a most valuable contribution to the subject.

The ultimate product of the diastatic action of ptyalin is dextrose, but, as recent experiments have shown, maltose is formed in much larger quantity. The reducing power of this latter body is 66, taking dextrose as 100; while the achroödextrins and other intermediate products have a very small reducing power. Therefore the reducing power of a digestive mixture must of necessity express the relative diastatic action of the ferment present; since increased action means an increased formation of reducing bodies, the final product possessing the greatest reducing capacity. But it should be remembered in connection with this, that diastase as well as ptyalin converts only a limited quantity of starch into sugar or reducing bodies; for, no matter how great the excess of ferment or the length of time the action is continued, the percentage of starch changed into sugar does not generally exceed 53 per cent.

The general method adopted was the following. In each experiment 100 cubic centimètres of the digestive mixture were taken; the amount of neutral starch present was 1 to 2 grammes, previously boiled in a definite amount of water; the temperature of digestion was 38° to 40° C. (100°.4 to 104° Fahr.); and the diastatic action was allowed to continue generally for thirty minutes, and then stopped at once by boiling the mixture. When cold, the mixture was diluted with distilled water to 200 cubic centimètres and filtered; 25 cubic centimètres of the filtrate were then precipitated with Fehling's solution, according to Allihn's method, the reduced copper filtered through asbestos in a small weighed glass tube and ignited directly in a current of hydrogen gas and weighed as metallic copper. By means of Allihn's tables of reduction equivalents the corresponding amount of sugar, calculated as dextrose, is readily obtained, and from this the percentage of starch converted into reducing bodies is easily computed.

* *Handbook of Forensic Medicine* (Sydenham Society's Edition), vol. i., p. 32.

The influence of free acid and of acid-proteid matter on the diastatic action of saliva has long been a very disputed subject, as it is naturally a point of considerable physiological importance. In experimenting upon the influence of acid proteid matter, Danilewsky's tropæolin oo test was employed. A saturated solution of the tropæolin was prepared in methyl alcohol; and, when the test for free acid was to be made, drops of the alcoholic solution were allowed to evaporate on a porcelain plate at 40° C.; and then, while still at this temperature, a drop of the fluid to be tested was added, and allowed to dry. Free hydrochloric acid causes the dry residue to assume a violet colour. A drop of a mixture containing only 0·003 per cent. of the acid gives a distinctly recognisable violet colour.

The amount of proteid matter naturally present in saliva, and which is capable of combining with acids is apparently quite constant; 100 cubic centimètres of filtered neutralised saliva containing proteids capable of combining with 38·8 cubic centimètres of 0·1 per cent. hydrochloric acid.

Up to a certain percentage, the presence of acid-proteid matter in the saliva tends decidedly to stimulate its diastatic activity. A difference must further be made between the acidity due to acid-proteids and to free acids respectively, for, owing to the disregard of this distinction hitherto, many errors have been committed.

It has been found that saliva, with its proteid matter saturated with acid, has a greater diastatic power in a given time than saliva simply neutralised, provided the percentage of acid-saturated proteids be not too large. When the amount of acid present approximates to the strength of the acid of the gastric juice, a destructive action is exercised on the salivary ferment. It is plain, therefore, that when the fluids of the stomach acquire an acid reaction from free hydrochloric acid, ptyalin will soon be destroyed. Yet in the first stage of digestion, when there is no free acid, the conversion of starch into sugar can undoubtedly go on; and at this stage of the process the proteid matter present may both protect the ptyalin and stimulate its activity; but, as the acid-proteids increase in amount and come nearer and nearer to their saturation point, the diastatic action may possibly stop entirely, even before free acid makes its appearance. Without doubt, all salivary ptyalin is ultimately destroyed in the stomach.

The presence of proteid matter in small amount has, therefore, a direct stimulating effect on the diastatic action of neutral saliva; but, above a certain percentage, the retarding influence exerted is out of all proportion to its power of destruction, the ferment even being almost completely destroyed.

The most favourable condition for the diastatic action of ptyalin, under most circumstances, appears to be a neutral condition of the fluid with the presence of more or less proteid matter. But the addition of very small amounts of hydrochloric acid to *dilute* solutions of saliva, giving thereby a *small percentage* of acid proteids seems still further to increase diastatic action; under such conditions also, a minute trace of free acid appears to intensify it still more. T. CRANSTOUN CHARLES, M.D.

M. DUCLAUX has been appointed Professor of Biological Chemistry to the Paris Medical Faculty. This chair has been created in order that the students of the Science Faculty may profit by M. Duclaux's teachings.

ARTICLE 5025.

TEALE ON SPASM OF THE SPHINCTER ANI, AND ITS TREATMENT BY FORCIBLE DILATATION.

IN the *Med. Times and Gazette*, November 1885, p. 729, Mr. Pridgin Teale publishes a clinical lecture on some affections of the anus and rectum.

The author commences with three statements. 1. If a patient complain of piles, the chances are three to one that it is not piles from which he is suffering. 2. In any complaint of 'piles,' though hæmorrhoids may be absent, there will be almost invariably an irritable or hypertrophied sphincter, which must be set at rest if the patient is to be cured. 3. During the last twenty years, the author has only once used the knife for the cure of fissure of the anus or of spasm of the sphincter ani. In every other instance, forcible dilatation was used.

Great stress is laid upon the fact that the sphincter ani is nearly always an important, and very frequently the leading, factor in rectal ailments. As the type of perverted sphincteric action, the author takes *fissure of the anus*. The fissure becomes irritable and painful, thus provoking spasm of the sphincter, which in time induces hypertrophy. The spasm also reacts upon the raw surface, and deprives it of the physiological rest needful for its recovery. The most successful plan of treating these cases is to forcibly dilate the sphincter with the fingers. In cases of habitual constipation due to a too powerful sphincter, the best results will follow dilatation performed in the same manner as in cases of fissure. Cases of *slight internal bleeding piles* are often cured by this treatment without the necessity of ligature.

In another class of cases, the author has found great value from dilatation. Whenever, in deeply extending fistula, free division into the rectum would involve a risk of permanent incontinence of the anus, by dilating the sphincter it is only necessary to partially slit up the fistulous sinus; the rectal end of the sinus generally heals up of itself, owing to the enforced quiescence of the sphincter. In the cases of infants suffering from obstinate constipation resulting from sores or cracks within or near the anus, there is often much good derived from moderate dilatation of the sphincter.

The author concludes this most interesting and valuable lecture with the following statements.

1. Spasm of the sphincter ani, as a cause of constipation, suffering, and ill health, is often overlooked, and patients are allowed to suffer for years who might be cured in five minutes.

2. Spasm of the sphincter can be arrested by forcible dilatation more satisfactorily, more certainly, more scientifically, and with greater safety, than by division by the knife.

3. In all operations on the rectum and anus, dilatation of the sphincter is an essential, almost an indispensable, element in the treatment.

RICHARD NEALE, M.D.

M. BAZY has modified Esmarch's bandage by substituting a large India-rubber band; constriction is exercised over a larger surface than with Esmarch's band, and with equal pressure. M. Bazy's modification is in this respect superior to that of M. Nicaise, which does not exercise sufficient pressure. M. Bazy's band is manufactured by M. Vergne, of Paris; it measures 85 centimètres in length and 71 centimètres in width.

ARTICLE 5026.

CHITTENDEN AND CUMMINS ON THE INFLUENCE OF BILE, BILE-SALTS, AND BILE-ACIDS ON AMYLOLYTIC AND PROTEOLYTIC ACTION.

THE influence of bile and biliary acids on the digestive processes of the intestinal canal has (*Amer. Chem. Jour.*, vol. viii., No. 1) long been considered an important one. The form in which the main constituents of the bile exist there, depends naturally upon the reaction of the intestinal contents; for, if this be acid, biliary acids must be present; if alkaline, salts of these acids. Recorded observations tend to show that usually the reaction is distinctly acid. Schmidt-Mulheim found that in dogs, fed on albuminous matter, the intestinal contents are invariably acid throughout the whole tract, although the mucous membrane sometimes possesses an alkaline reaction. In such cases, it is evident that the alkali of the bile must have combined with the acid of the chyme, which would be followed by the liberation of the bile-acids, and their partial precipitation in combination with the proteids of the chyme.

Uffelmann also found that the fæces of naturally nourished infants possess a weak acid reaction; but Nothnagel, as the result of 800 observations, states that human excrement in adults varies decidedly in its reactions, being generally alkaline, more rarely acid or neutral. One of the results of the action of the bile on the acid reacting chyme is a precipitation, generally supposed to consist of a mixture of syntonin, peptone, and bile-acids; but recent experiments of Maly and Emich tend to show that only the non-peptonised albuminous bodies are thus precipitated, the peptones remaining in solution. Maly and Emich have further found that 0·2 per cent. of taurocholic acid hinders the digestive action of pepsin-hydrochloric acid, while 1·0 per cent. of glycocholic acid is without influence; also that 0·1 per cent. of either biliary acid stops the amylolytic action of the pancreas ferment, and that 0·2 per cent. of taurocholic acid or 1 per cent. of glycocholic acid will completely stop the amylolytic action of the salivary ferment.

The authors of the present paper find that a mixture of sodic glycocholate or taurocholate, as they exist in crystallised ox-bile, exerts no appreciable retarding influence on amylolytic action until present to the extent of 0·35 per cent.; smaller percentages, on the contrary, tending to increase the ferment action. The taurocholic acid has a very decided retarding action, while the same percentage of glycocholic acid is entirely without effect. So far as bile itself is concerned, the presence of a small percentage (2) appears to cause increased amylolytic action; larger percentages (5 to 20) having little or no effect. Bile, however, possesses to a slight extent diastatic action (Wittich, Hofmann, &c.). The authors have proved that there is great variability in the diastatic power in the bile of herbivorous animals, and they have even noted the presence of sugar in small amount. This last fact has also been observed by Naunyn.

While, therefore, the bile-acids and salts by themselves retard very decidedly the amylolytic action of ptyalin, it would appear that the retarding influence may be, in part at least, counteracted by the substances naturally present in the bile itself.

It has long been known that bile exerts a retarding action on peptic digestion, the presence of 20 per cent. of it stopping its action almost completely, the reflux of but a small amount into the stomach being productive of diminished proteolytic action. The presence of the smallest percentage of taurocholic acid produces a distinct retarding effect, and it acts still more powerfully in the form of the sodium salt. Glycocholic acid, on the contrary, is entirely without influence on the action of pepsin.

In studying the proteolytic action of trypsin in neutral, alkaline, and acid solutions, it was found that, when sodic carbonate was present in the proportion of 0·5 per cent., the action of the ferment was greatly favoured, but above that point proportionally retarded.

Free acids, even when present in small percentages, completely stopped the proteolytic action of trypsin. A sufficient amount of proteid matter just saturated with hydrochloric acid, no free acid being present, will also almost completely stop the action of trypsin. But proteid matter only partially saturated with acid exerts a much smaller retarding action. This, doubtless, is the true explanation of the statements made by Mays and Engesser, that the presence of 0·3, or even 0·5, per cent. of the acid did not destroy the tryptic action. Kühne, for example, has shown that hydrochloric acid above 0·05 per cent. is injurious to the action of trypsin; while Heidenhain has shown that the addition of 0·1 per cent. of hydrochloric acid to an aqueous extract of pancreas stops its action.

In any ordinary digestive mixture, or even where albuminous matter is present only in small amount, the addition of hydrochloric or salicylic acid to a neutral solution of trypsin reduces its proteolytic action to a minimum before any free acid is present.

The addition of bile to a neutral or alkaline pancreatic juice causes but little change in its proteolytic action, and the pure biliary salts act in like manner, but the acids themselves, particularly the taurocholic, exert a manifest retarding action; a small percentage of glycocholic acid, on the other hand, appears to increase the ferment action; indeed, an increased activity of tryptic digestion of fibrin occurs in the presence of 10 per cent. of bile.

T. CRANSTOUN CHARLES, M.D.

ARTICLE 5027.

KISCH ON STERILITY IN WOMEN.

DR. E. H. KISCH, of Prague (*Deutsche Medicin. Wochenschrift*), begins by referring to three theories propounded in explanation of sterility. 1. What he calls the mechanical obstruction theory has been credited with a too general applicability. In truth, it does not apply to the majority of cases. 2. The antagonistic theory is, that disease of the female sexual organs causes sterility by rendering the uterus incapable of developing the ovum. This is an important, but not the sole, factor in accounting for sterility. 3. Dr. J. Matthews Duncan's theory is not more generally applicable, according to which our whole knowledge of sterility is to be comprehended under the expression a 'failure of reproductive energy.'

Sterility is rather one of the most complicated functional disturbances in woman. There is a combination of a series of etiological factors that contribute to sterility, and Dr. Kisch proposes to sketch that sterility, which has its origin in the incapacity to form a germ (*Unfähigkeit der Keimbildung*). This can be absolute and irremediable, from the entire absence or organic alteration of the ovaries; but he takes into consideration only relative and temporary incapacity. Germinal formation in the ovarium may be injuriously affected by pathological conditions in itself or its environment, by disturbances of innervation and constitutional anomalies. Imperfect development of the ovaries in young girls causes sterility, which will last till the organs gain strength. Statistics bear him out in this view. He gives the following statistics of 556 child-bearing women.

	The first birth takes place as long as ten months after marriage.	between ten and fifteen months after marriage.	between fifteen months and two years after marriage.	between two years and three after marriage, in some that three years after marriage.
In 163 women, married when between 15 and 19	35	53	46	18	10
In 313 women, married when between 20 and 25	38	113	56	32	14
In 70 women, married when between 26 and 32	18	30	12	9	1
In 10 women, married when past 33	4	3	1	1	1

From these statistics he calculates the percentages, and finds them of course in favour of his views.

Another source of hindrance to germination lies in various pathological conditions of the ovaries, chronic oöphoritis being particularly instanced as an occasional hindrance to the formation of ovules. Both oöphoritis and peri-oöphoritis can lead to chronic sterility through the stages of parenchymatous inflammation, absorption of the follicles and their consequent collapse, contraction of the ovary, induration of tissue, and a general condition of the ovary, similar to what he has described as characteristic of the grand climacteric.

Peri-oöphoritis sometimes causes various ribbon-shaped adhesions which compress the ovary, induce atrophy, and hinder germination. Syphilitic disease of the ovaries also causes chronic inflammation leading to shrivelling up, formation of various adhesions, and sterility. Ovarian tumours are often complicated with sterility; but it is an open question whether in most cases sterility is the cause or the result. It is difficult to demonstrate how anomalous conditions of the blood, general nervous disturbances, febrile processes, constitutional anomalies, or toxic mischief, injuriously affect germination, but the fact that they do so is established; and he instances typhoid fever, chronic intermittent fever, nutritive disturbances such as scrofula and obesity, opium-eating, and excessive use of alcohol.

Excessive formation of fat is injurious to germination, both in plants and in animals. Dr. Kisch long since pointed to amenorrhœa as occurring in corpulent women, and to the high percentage of sterility in such cases. By reducing corpulence, sterility has often been removed without any local treatment. Scrofula very frequently and most injuriously affects germination. Cicatrised scrofulous glands may sometimes give a hint. Chlorosis is also an obstacle to germination, but not so obstinate. He

gives an instance of diabetes leading to atrophy of the ovaries. Then he shows that experiments on animals have demonstrated that imprisonment, fatigue, poor food, and unchastity are causes of sterility. Such, too, are undoubtedly disturbances of innervation, most frequently sudden cessation of menstruation after a fright, &c. He knows the case of a woman who had had two children, and in whom the menses were suppressed in consequence of a fright caused by a child being run over, remaining sterile ever since—*i.e.* for ten years.

J. ELLIOTT.

ARTICLE 5028.

LASHKEVITCH ON OXYGEN INHALATIONS IN NERVOUS DISEASES.

IN the *Russkaia Meditzina*, Nos. 8, 9, and 10, 1885, Professor V. G. Lashkevitch, of Kharkov, publishes a very interesting lecture on the use of oxygen inhalations in the treatment of diseases of the nervous system. At the outset, he states his surprise at the fact that text-books on neuropathology do not even mention such a powerful therapeutic agent.

Discussing its physiological action, the author points out the following facts. 1. Pure oxygen is absorbed by the blood in considerably greater proportions than the oxygen of the air (Claude Bernard, Grehaut). 2. Inhalations of pure oxygen produce an increase in the daily excretion of urea (Claude Bernard, Ananoff). 3. At the same time, they increase the temperature of the body from 0°·2 C. to 0°·9 C. [This was shown by Ananoff's experiments on healthy men, and by Lashkevitch's observations on patients with typhus fever. However, experimental researches, carried out in Professor J. M. Dogel's laboratory by Drs. Naumoff and Belaëff, failed to give support to that statement. *See* the *Proceedings of the Kazan Society of Naturalists*, 1877, No. 97.—*Rep.*] 4. They retard the pulse while augmenting its volume. 5. They most powerfully lower reflex action [as Rosenthal, P. J. Uspensky, and Ananoff showed. Working under the guidance of Professor S. B. Botkin, Dr. Ananoff poisoned rabbits by strychnine, and then made them breathe in pure oxygen; no tetanic convulsions occurred during the stay of the animals in the oxygen atmosphere. (*See* Ananoff's inaugural dissertation *On the Therapeutic Use of Oxygen*, St. Petersburg, 1873.)—*Rep.*]. 6. They strikingly (three times as much as normal) increase the secretion of urine (V. G. Lashkevitch).

Passing to the therapeutic applications of oxygen inhalations, the author details eight successful and six unsuccessful cases. Oxygen proved useless in paralysis agitans (three cases), chronic meningomyelitis, spasmodic tabes, and chorea minor. It gave excellent results in the following cases. 1. In a severe case of hystero-epilepsy, the inhalations invariably and rapidly cut short the paroxysms, produced quiet sleep, improved the general state, and ultimately, after two weeks' treatment, cured the patient (at least temporarily). 2. In a case of hysteric motor and sensory hemiplegia, inhalations of one minute's duration removed all the symptoms. 3. In a severe case of hysteric convulsions and excitement after a mental shock, one minute's inhalations of oxygen, frequently repeated during the day, not only cut short the attacks, but brought a complete recovery. 4. In a severe case of agonising spasmodic cough in early pregnancy, the inhalations immediately arrested cough, and, after two days' use, cured the patient. 5. In a case of true hydrophobia (lyssa humana), the inhalations strikingly relieved the patient's sufferings (removed intense aërophobia, inhibited convulsions, &c.); the case, however, ended fatally. [A successful case of the treatment of hydrophobia by oxygen inhalations was published by Professor Lashkevitch in the *Meditzinsky Vestnik*, No. 16, 1871.] 7. In a case of syphilitic disease of the spinal cord, with spurious aërophobia and hydrophobia, and most intense muscular superexcitability, all the symptoms completely disappeared after treatment of three days' duration. 8. It was useful in a case of bronchial asthma, periodically recurring at the menstrual period.

Comparing these two groups of cases, Professor Lashkevitch points out that oxygen has proved of service in nervous disturbances of reflex nature, while, in the absence of the latter characteristic, it was found of no use whatever. Hence the author prophesies good success from the oxygen treatment in traumatic tetanus and eclampsia of reflex origin. He tried oxygen inhalations, also, in two cases of stenocardia in patients with arterial sclerosis and aortic dilatation, and in one case of Graves's disease. In the stenocardiac cases the paroxysms, which had previously lasted from one to two hours, and been very severe, under the treatment shortened to fifteen minutes, and became very mild. In the case of exophthalmic goître (a chloranæmic girl, aged 17), oxygen considerably relieved palpitation, and tension in the eyeball.

According to the author, oxygen has of late again come into favour with Russian practitioners. Thus, Dr. Ananoff has used it in tabes, epilepsy, nervous cardiac palpitation, hysteria, and Graves's disease (at Professor Botkin's suggestion). Dr. P. J. Uspensky has seen diminution of pain and improvement of co-ordination in locomotor ataxy. Dr. Afanasieff has published two successful cases of oxygen inhalations in pleuritis. Professor Yurii T. Tchudnovsky, of St. Petersburg, has obtained good results in cases of incontrollable vomiting of pregnancy. Professor Bystroff, of St. Petersburg, has found the inhalations useful in a case of asphyctic cholera.

[In the LONDON MEDICAL RECORD, June 1885, p. 250, the reader will find two successful cases of oxygen treatment in eclampsia, published by Dr. Favr. In the *Revue Méd. de la Suisse Romande*, Oct. 15, 1883, and in the *Annales de Gynécologie*, May 1884, Dr. Mayor publishes five cases (four of his own, one of Manoir) of successful treatment of dyspepsia in pregnant women by daily inhalation of 4 to 10 litres of oxygen. In the *Deutsche Med. Wochenschr.*, No. 36, 1883, Dr. Albrecht stated that he treated patients suffering from bacillar phthisis by inhalations of pure oxygen, and saw arrest of falling of, and even an increase in, the body's weight, as well as diminution of dyspnœa. In the *Vratch*, No. 29, 1884, p. 456, a report may be found that Dr. Troncin, of Toulon, tried oxygen inhalations, repeated hourly, in Asiatic cholera, and saw improvement of the general state and pulse of the patients. In a preliminary note in the *Vratch*, No. 37, 1883, p. 577, Dr. P. Ambrorzewicz writes that he, starting from Pasteur's statement concerning the anaërobic nature of the septic vibrio, produced artificial septicæmia in guinea-pigs, and tried to treat them by keeping them in an atmosphere of pure oxygen. The author's expectations, however, were not realised.

All the animals died, and only a few of them lived several hours longer than the control-animals kept in the ordinary atmosphere. The greatest resistance (survival for two days) was shown by animals which had been inoculated with cadaveric virus, only after a previous narcotisation with chloral and an hour's stay in oxygen. *See* also Dr. R. Neale's *Medical Digest*, sect. 227 : 3–4.—*Rep.*]

V. IDELSON, M.D.

ARTICLE 5029.

MILLER ON FERMENTATION PROCESSES IN THE DIGESTIVE TRACT, AND THE ACCOMPANYING SCHIZOMYCETES.

IN the *Deutsche Medicinische Wochenschrift* of Oct. 3, 1885, Dr. Miller has a paper on the above subject, of which we here give an abstract.

Of the whole digestive tract, the mouth presents the best conditions for the vegetation of schizomycetes, because in it there are the most varied nutritive substances accompanied by copious admission of air and favourable temperature, with none of the drawbacks that occur in the lower portion of the tract. The number of different schizomycetes which Dr. Miller has found in the mouth is twenty-five (the largest number he found in the same mouth was eleven, not counting the Leptothrix buccalis, Spirochaete dentium, and Vibrio buccalis). Of the above mentioned twenty-five, twelve are cocci and thirteen bacilli.

As to the mycetes found in the stomach, many experiments have led him to believe that they are to a great extent identical with those found in the mouth. To account for the presence of mycetes in the stomach, one plausible theory is that they are all introduced with the food. Less probable (though possible) is it, that they enter from below. But it would not be safe at once to assume that the great number of mycetes found lower in the tract enter from or through the mouth; for, while entrance *per anum* is not excluded, at the same time it must be remembered that a healthy stomach is considered impassable for many sporeless mycetes. Yet Dr. Miller's opinion, based on close observation, is that any fungus may, under certain conditions, pass intact through the stomach, and that most, if not all, of them find entrance through the mouth. To show how far they can resist the action of the gastric juices, he gives the following experiment. About three hours after a meal, he took a portion of the contents of the stomach of a patient who 'could empty his stomach at will any given time by eating a little fruit two hours previously,' and, excluding the air, kept it at blood-heat. In three hours he found three living schizomycetes, two yeast-fungi, and one fibrillar fungus. In ten hours, one schizomycete was still alive, and only after fourteen hours was all life extinguished, with the exception of the yeast and fibrillar fungi. The mixture exhibited a strongly acid reaction, the presence of lactic acid being pronounced.

The fact that a fungus perishes in a short time in artificial gastric juice containing ·2 per cent. of hydrochloric acid, is no proof that it cannot reach the bowels intact; for, in the first place, fungi swallowed at the commencement of a meal do not find the stomach filled with gastric juice, but in a neutral or alkaline condition—only in from half an hour to an hour and a half will there be hydrochloric acid in any considerable quantity. Then, again, the fungi are often imbedded in solid portions of the food, and are thus protected for a time from the action of the juice. And, lastly, liquids do not remain long in the stomach, and would therefore carry with them different fungi before the secretion of any quantity of hydrochloric acid.

Dr. Miller does not consider the experiment of Watson Cheyne and others conclusive, because made under conditions little resembling those of the stomach. We may gain from such experiments some knowledge of the antiseptic qualities of the gastric juice, but little insight into the actual process in the stomach itself. Digestion being different in animals, experiments on the latter are also of little importance here.

In order to reproduce as faithfully as possible the processes in the human stomach, Dr. Miller chewed a quantity of bread and meat, then added to four parts of this one part of milk, and put the mixture into different test-tubes, which were all, except one, sterilised and then plentifully inoculated with certain fungi. The test-tubes were kept at blood-heat; to each was added every ten minutes 2 cubic centimètres of an artificial gastric juice containing ·4 per cent. of hydrochloric acid, so that in an hour the mixture contained ·2 per cent. of hydrochloric acid, the maximum in actual digestion. At short intervals plate-cultures were made from the different tubes. Only from two and a quarter to two and a half hours from the beginning of the experiment (= meal) the fungi in the non-sterilised tube proved to have considerably diminished in number. In the tubes inoculated with gastric fungi possessing great powers of resistance, the diminution began half an hour later; while Miller's comma-bacillus, which is very susceptible to acids, exhibited only few colonies an hour and a half after the beginning of the experiment. Dr. Miller has so far never examined a fungus which could not easily have reached the bowels if swallowed at the beginning of a meal. But if swallowed two hours after the meal—*i.e.* at the height of digestion—the weaker fungi perished in a few minutes, whilst others resisted for more than two hours, and might, therefore, reach the bowels.

He comes to the conclusion that, considering how abnormally small is often the quantity of secreted gastric juice and its hydrochloric acid contents, the stomach presents as good as no barrier to the entrance of infective spores into the bowels, and that it depends on the condition of the latter whether a development of the admitted organism takes place.

This has been directly proved to be the case with the cholera-bacillus, in so far as Koch has discovered that, in order to render a guinea-pig receptive of the cholera-virus, it was not sufficient simply to neutralise the contents of the stomach to allow the fungi to enter the bowels, but that there must first be a natural or artificial 'torpidity of the bowels, with a cessation of the peristaltic motion.' Even the absorption of acid by particles of food seems to offer a certain protection to the fungi.

Another important question in this connection is. At what degree of acidity does fermentation cease in the stomach? or what quantity of a certain antiseptic (hydrochloric acid, salicylic acid, &c.) is required to put an end to abnormal fermentation in the stomach or bowels? The following experiment was made with a view to the answering of this question.

Dr. Miller chewed a quantity of bread and meat, added some sugar and a sufficient quantity of milk. This mixture was plentifully infected with three kinds of stomach fungi, all possessing the property of forming large quantities of gas, and then mixed with an equal quantity of from 3 to 4 per cent. peptone sugar gelatine.

This mixture stood in the stove for an hour, and was then divided into several equal portions (20 cubic centimètres). Hydrochloric acid was added to them in increasing quantities, so that the first portion received 4 parts of hydrochloric acid to 10,000 and the last 2 to 1,000. All were then poured into different test-tubes, the level of the mixture being marked on each tube. Stiffening soon took place, and in a few hours, in those tubes in which fermentation followed, a raising of the level was caused by the formation of gas, the wadding stoppers and a part of the mixture being even forced out of the first tubes. It appeared that only when the proportion of hydrochloric acid was 1·6 to 1,000 the level remained unchanged; in other words, fermentation stopped. This he could effect by salicylic acid in the proportion of ·4 to 1,000. To immediately stay fermentation in one litre of a fermenting mixture, at least 1·6 grammes of hydrochloric acid (6·4 grammes of a hydrochloric acid solution of 1·1233 specific gravity) or ·4 of salicylic acid, must be added. In fermentation in the stomach, it is not a question of the total absence of hydrochloric acid, but only of a diminution of its quantity. Therefore the quantity of the antiseptic required to stay fermentation must depend on the intensity of the latter and the quantity of the stomach contents. But in any case very considerable doses of hydrochloric acid must be given to produce an effect.

Bidder and Schmidt estimate the daily secretion of gastric juice at from 10 to 20 litres. If we regard this estimate as from two to three times too high, and accept 5 litres as a normal quantity, this would correspond to 10 grammes of hydrochloric acid, or about 40 grammes of a hydrochloric acid solution of 1·1233 specific gravity, which are said to be daily poured into the stomach. Taking the proportion of 2 of hydrochloric acid to 1,000 as that at which fermentation does not take place, and supposing that it takes place when the proportion of hydrochloric acid is reduced to 1·6, we may reckon on a deficiency of hydrochloric acid, of at least ·4 grammes per litre of stomach contents, and this quantity would have to be administered to restore the normal conditions.

In ordinary lactic acid fermentation outside the stomach, the process is stopped after some hours by the acid that is formed. But this does not hold good in the stomach, since the acid is pretty quickly removed by absorption, and the acidified contents of the stomach are several times a day supplanted by new material.

The results above given further prove how insignificant a change in the quality or quantity of the gastric juice suffices to render a fermentation of considerable duration possible in the stomach. It might certainly be objected that in the coagulated mixture the hydrochloric acid cannot exercise its full effect, yet the test experiments made at blood-heat showed that at this temperature fermentation can occur with a still higher proportion of hydrochloric acid.

Dr. Miller tried the effect of all these fungi on carbo-hydrates, in order particularly to test their acid-forming capacity, hoping thus to establish the cause of the formation of acid in the mouth. Thus he cultivated them in saccharated meat-extract, in saccharine solutions of pepsine, and in milk. Of the mouth-fungi, sixteen gave an acid reaction, four alkaline, while with five there was no decided result. With the stomach-fungi the figures were respectively nine, two, and two; and with the bowel-fungi six, five, and three. Thus the proportion of acid-forming fungi in the mouth and stomach is considerably greater than that of the bowel-fungi; but it is questionable if all experiments will yield the same ratio.

Cultures in sterilised milk yielded somewhat diverging results; nor was it possible to draw a sharp line between fungi that gave an acid and those that gave an alkaline reaction, seeing that the reaction in some cases was only very weak, and, further, after a time varied, whilst in others it was materially influenced by an alteration of the saccharine contents.

By the change of substances in growing cells, products arise which give the fluid an alkaline reaction, while substances produced by saccharine fermentation give an acid. Thus the reaction depends on the excess of the former or the latter. Nor does Dr. Miller think that putrefactive and fermentative fungi can be clearly distinguished. A mouth-fungus which he examined quickly dissolved the boiled albumen of an egg, at the same time yielding malodorous products, amongst which sulphuretted hydrogen and ammonia were easily distinguished; in the second place, it exhibited an inversive effect, changing cane-sugar into dextrose and lævulose; thirdly, it decomposed fermentable sugars into lactic acid, developing at the same time carbonic acid; fourthly, in a starch-solution of meat-extract it caused acid reaction, the solution becoming slightly reducible by oxide of copper. In other words, this fungus possesses a diastatic power.

Dr. Miller then points to the fact that probably in the last stages of their different fermentations there are many secondary products in the case of one and the same organism. The twenty to thirty different substances arising from putrefying mixture exposed to the air may, indeed, not be the result of one fungus, but neither is it correct to suppose that every product owes its origin to a different fungus.

Impossible as it is to determine the acid for every one of the numerous fungi, he yet found that out of eighteen cases ten gave lactic acid, and it has been established that many of the schizomycetes have this property, as well as that of peptonising and inverting. Thus we have an explanation of frequent or constant lactic acid in the stomach and bowels. Among other acids he has found by analysis, crystallisation, and the colour-test, he instances acetic, pomic, citric, and also oxalic acids, with their salts; and many more are possible. All these must be excluded before the proof of lactic acid can be relied on, as all react in the same way.

Microscopically, great differences are to be observed in fermentations produced by different lactic acid fungi, especially as regards the gases developed. Often we find lactic acid fermentations without a trace of gas development; on the other hand, some of the above-mentioned fungi form large quantities of gas ($CO_2 + H$), so that the gelatine in the cultures is cleft in all directions, or a portion of it forced out of the tube, or even the tube itself burst by the pressure. This is in itself a proof of the absence of pure lactic acid fermentation, according to the equation $C_6H_{12}O_6 = 2C_3H_6O_3$, and analysis indicates the other above-named acids. Of such gas forming

fungi he particularly mentions five, which regularly formed large gas-bubbles in the gelatine or tore it up altogether. One of these he has found in fæces and gangrenous tooth-pulp. This accounts for the frequency of dental abscesses. If a tooth with necrosed pulp be stopped without previous removal of the pulp and sterilisation of the cavity, the gas that subsequently forms forces itself through the foramen at the point of the fang, or even carries little particles of the decayed pulp along with it, which cause inflammation. Holes are sometimes found bored into the teeth, through which pus and stinking gases constantly escape into the mouth.

Of the other gas-forming fungi, Dr. Miller has found three in the stomach and one in the fæces, whose effect may be imagined.

Another important question is that which refers to the peptonising effect of the bowel-fungi particularly. They generally flourish on boiled albumen of egg, and therefore may be credited with a peptonising quality. The albumen was prepared in the test-tubes so as to expose the greatest possible surface, being then kept in a damp chamber to prevent desiccation. In this way, it can be kept sterile for any length of time. Four fungi did not develop at all on this 'bed'; six showed very limited growth, but the rest flourished and in some cases completely liquefied the albumen. Whether they form more peptone than is necessary for their nourishment, in fact, whether and in how far they may beneficially affect the human body by this quality of theirs, is a difficult question. An experiment was made with a comma-bacillus on a considerable quantity of sterilised egg-albumen, and at the end of the third day, on removal of the albumen, traces of peptone were discovered by the bi-urate test.

Less frequently has Dr. Miller found traces of diastatic effect; in fact, only once in nine times. This one changed starch into a reducing sugar, which in its turn became an acid. It is no proof of diastatic effect in a fungus that it flourishes on slices of cooked potato; for it does not depend solely on the starch, but can find nourishment for a time just as well in the proteid, sugar, &c., of the potato.

Of fifty kinds of fungi, not one was found which flourished *better* without than with admission of air—*i.e.* that could be termed anaerobic. On the other hand, there was every intermediate grade, from such as did not grow at all without the oxygen of the air to such as flourished equally well with or without oxygen. The admission of air in limited quantity caused in most cases a dwarfish growth. The results of all these experiments may be thus summarised.

1. A large number of fungi occur *in all parts* of the digestive tract.

2. The gastric juice seldom prevents fungi from reaching the bowels alive; *never*, as far as Dr. Miller's experience goes, if the fungi be swallowed at the commencement of the meal; and only the more delicate ones, if digestion be at its height.

3. Lactic acid fermentation can continue in the stomach until the contents have reached a degree of acidity of about 1·6 of hydrochloric acid to 1,000. If too little hydrochloric acid be secreted, or proportionately too much food be taken, fermentation will continue. Diseases of the stomach and general disturbance of its health (fever, &c.) favour fermentation by disturbing the secretion of gastric juice.

4. Fermentation in the stomach can be more easily remedied by salicylic than by hydrochloric acid.

5. No inconsiderable number of the fungi of the digestive tract cause lactic acid fermentation in solutions containing carbo-hydrates, thus explaining the frequent occurrence of lactic acid.

6. In the case of five species of fungus, fermentation proceeded with formation of considerable quantities of carbonic acid and sulphuretted hydrogen.

7. No clear distinction is possible between fungi that cause an acid reaction, and those that cause an alkaline, nor between fermentative and putrefactive fungi.

8. He has in most fungi proved a peptonising effect, but much less frequently a diastatic effect.

JOHN ELLIOTT.

ARTICLE 5030.

MONTI ON THE TREATMENT OF CONGENITAL SYPHILIS BY THE OLDER AND NEWER METHODS.

PROFESSOR MONTI, of Vienna, contributes a valuable paper on this subject to the *Archiv für Kinderheilkunde*, Band vi., Heft 1. Of treatment by inunction, the oldest is that in which blue ointment is employed. It is still largely used; but the objection to it is that it oxidises too readily in this form, and is then apt to produce eczema. Oleate of mercury is extensively used instead of the blue ointment; and mercurial plasters have been substituted by some, while Charcot recommends mercurial soap. All those compounds are, however, more or less unsuited to the tender skin of infants, the least objectionable being the oleate of mercury. Dr. Monti has, however, had no personal experience of the soap. Moreover, inunction involves considerable risk of the system rapidly absorbing an excessive quantity of the drug, and in the case of very young infants this leads to acute anæmia. He has also come to the conclusion that the sudden death which is not an uncommon incident in hereditary syphilis occurs with far greater frequency where this has been treated by inunction. For these reasons, he has for some years ceased to use it in the case of children under one year. The next treatment under review is that by calomel. This also has a tendency to produce anæmia, and should, therefore, be given as a powder in combination with lactate of iron. This should be discontinued when the first symptoms have disappeared, and saccharated iodide of iron substituted until the spleen is no longer felt or the skin has resumed its normal colour; but should the disease reappear in the skin, mucous membrane, or bones, calomel must again be resorted to. In some rare cases, such as those where there is great irritability of the intestinal tract, a subcutaneous injection of a freshly prepared mixture of calomel suspended in mucilage may be administered.

The treatment by corrosive sublimate gives very satisfactory results, provided it be not too long continued, in which case symptoms of gastric irritation will supervene. This drug is also administered in the form of a bath, which should contain about seven grains; but, in the writer's experience, their effect upon the disease is very slow, and should therefore be accompanied by calomel internally, and in that way they appear to hasten the cure. The best mode of giving corrosive sublimate is by subcutaneous injection. The solution should consist of perchloride

of mercury gr. jss., chlorate of soda gr. vj., and water 150 grains, and of this one-half to one syringeful should be used every day or every other day until the symptoms disappear, to be renewed upon their return. The punctures are best made upon the abdomen or chest, and must not be too close together.

The injection is in general well borne, and, according to Dr. Monti's experience, never produces mercurialism, and causes very little loss of flesh. It cannot be denied, however, that infants do not bear these injections so well as adults; even with the greatest care, it is not uncommon to find induration of the cellular tissue and abscesses at the seats of puncture. It is also not suitable for out-patients, because the mothers decline to bring the children after the first few times. Notwithstanding that the symptoms subside more rapidly under this treatment than under any other, the author has of late confined its use to cases that would not bear mercury internally.

Albuminate of mercury, as recommended by Bamberger, is preferable for hypodermic use to corrosive sublimate, provided the solution be clear; but it is excessively unstable, and, if used in a cloudy state, produces irritation and abscesses. Much the same objection applies to mercury-peptone, though it is rather more stable. Formamide of mercury (Liebreich) is unsuited to children. Protiodide of mercury produces excellent results, especially when combined in a powder with lactate of iron, and perhaps no other remedy acts so promptly upon syphilitic affections of the bones. Unfortunately, it produces diarrhœa and colic, and the addition of Dover's powder to the above compound soon ceases to have any effect. Consequently, Dr. Monti only gives it in cases where bone-affections exist from the beginning. Black oxide of mercury, as recommended by Henoch, was found to produce vomiting, and was therefore soon given up. The author has had only a limited experience of hydrargyrum tannicum oxydulatum (Ludwig), but is favourably impressed by it, more especially because it does not appear to affect the digestive organs. It is now a recognised fact, that hereditary syphilis can be cured by preparations of iodine as well as, though more slowly than, by mercury. It may be given as iodide of potassium, to which, however, there are on the whole insuperable objections, or as saccharated iodide of iron. The treatment of syphilis with this drug was favourably commented upon by the author in a paper on the subject in 1876 (see LONDON MEDICAL RECORD, vol. iv., p. 222), and his subsequent experience of it has confirmed this predilection. It is borne well by children of any age, improves their nutrition, and never produces iodism; but it is much slower in its action than mercury, and is therefore best suited for very chronic cases. It should be given as a powder; for, if the syrup be used, it is apt to produce diarrhœa. Three grains may be divided into ten powders, and a new-born child may have two or three daily, dissolved in milk. RALPH W. LEFTWICH, M.D.

M. ROUYER recommends cauterising with nitrate of silver in cases of traumatic erysipelas. He uses a 1·5 per cent. solution. This was in the first instance tested with success on a patient whose leg had been amputated for a gunshot-wound, when serious erysipelas supervened. Subsequent cases have been equally satisfactory. [The local application of nitrate of silver in erysipelas was strongly recommended many years ago by the late Mr. John Higginbottom, of Nottingham.]

ARTICLE 5031.

SUTTON ON THE NATURE OF LIGAMENTS.*

THE appearance, in the last number of the *Journal of Anatomy and Physiology*, of another of the original and suggestive papers by Mr. Sutton on the nature of certain ligaments, seems a convenient opportunity for summarising the work which he has done in this direction up to the present. Mr. Sutton considers that muscles, particularly of the extremities, and especially of their distal portions, may from partial or complete disuse, or alteration of function, become in certain respects modified.

1. The extremities or a great part of the structure may become tendon. (Metamorphosis.)

2. Points of origin may become shifted (this generally at the proximal extremity). (Migration.)

3. The whole muscle may become fibrous tissue. (Regression.)

Taking the ligaments dealt with in anatomical groups, his results may be summarised as follows.

I. *Vertebral Column.*—1. The ligamentum suspensorium dentis marks the course of the notochord from the body of the axis into the basi-occipital bone. 2. The check ligaments of the axis and the transverse ligament of the atlas are representatives of the ligamentum conjugale costarum of the seal and many other animals, and are present in the human fœtus at birth. 3. The posterior common ligament is a thickening of the connective tissue between each conjugal ligament. 4. The anterior common ligament is a degenerated representative in mammals of the subnotochordal rod of ichthyopsida.

II. *Clavicular Ligaments, &c.*—1. The interarticular fibro-cartilage at the sterno-clavicular joint represents the omo-sternum of the opossum and other animals. 2. The rhomboid ligament represents the muscle from the cartilage of the first rib to the omo-sternum in the opossum. This muscle is thought to make up a part of the subclavius. 3. The ligament forming the free edge of the costo-coracoid represents the long coracoid of birds and monotremata.

III. *Scapular Ligaments.*—1. The coraco-acromial represents the hoop-like process of bone in the two-toed sloth. 2. The transverse may be fibres of the supraspinatus muscle (porpoise) or bone (sloth). The author thinks this the more usual occurrence. An ossified transverse ligament, then, from this point of view, would be a return to the normal, rather than an abnormality. 3. In this connection may be mentioned the scapular loop in penguins, transmitting the tendons of the latissimus dorsi, which consists of modified fibres of the deltoid.

IV. *Shoulder-joint and Arm.*—1. In two of his papers, the author treats at length of the gleno-humeral or Flood's ligament. This he believes to be the tendon of the subclavius muscle. He finds that every mammal possessing this ligament has also a ligamentum teres; that where the latter is absent, so is the former; and that a large development of the former coexists with a similar condition of the latter. As bearing on his theory already enunciated he notes: *a.* that all amphibians which possess the equivalent of the subclavius, the epicoraco-humeral of Mivart, in a well developed form, lack the gleno-humeral ligament; *b.* that in birds, in

* *Journal of Anatomy and Physiology*, vol. xvii., Jan. 1883; vol. xviii., Jan. 1884; vol. xix., Oct. 1884; vol. xx., Oct. 1885.

whom the subclavius, under the name of levator humeri, reaches its maximum of development, it passes through the shoulder-joint to be inserted into the humerus; here, also, there is no gleno-humeral ligament; *c.* that in mammals the subclavius is a very constant muscle, and the gleno-humeral ligament exists in a very large number of them. When not separated as a free ligament it may often be detected blended with the capsule of the shoulder-joint, but lying between it and the synovial membrane. 2. The *coraco-brachialis* may be considered as three parts: (*a*) the fibrous loop connected with the lesser tuberosity may be distinct, and represent the rotator humeri; (*b*) the middle part is the coraco-brachialis of man; (*c*) the lower part, connecting the tendon to the internal condyle, is rarely fully developed, but exists as a fibrous band, the internal brachial ligament of Struthers.

V. *Hip.*—The ligamentum teres represents the tendon of the pectineus.

VI. *Knee.*—1. The external lateral ligament represents the tendon of the peroneus longus. 2. The internal lateral ligament represents the tendon of the adductor longus. 3. The semilunar cartilages cannot be with certainty assigned to any special muscles, save that, in part, at least, the semi-membranosus forms the inner. The popliteus may have some connection with the external, which may also represent the sole remnant of the long tendon of the femoro-caudal of some animals (*e.g.* iguana). 4. In this connection may be mentioned the loop for the tendon of the biceps met with in birds, and formed either altogether, or only internally (rhea, emu, and others), of tendon. In the latter case, the outer portion is formed of fibres of the outer head of gastrocnemius. From this muscle the loop appears to be formed, its causation being due to the bending of the leg at a more or less acute angle with the thigh, thus producing a drag upon the muscular fibres between which the biceps passes. Mr. Sutton believes that this explains the fibrous expansion of the tendon of the biceps over the outer aspect of the leg in man.

VII. *Tibio-fibular Ligaments.*—1. The interosseous ligaments of the leg may represent the peroneo-tibial muscles of hatteria, iguana, wombat, and others. 2. The posterior superior tibio-fibular may represent the rotator fibulæ. 3. The transverse ligament of the inferior tibio-fibular articulation may represent the lower end of the peroneo-tibial muscles.

VIII. *Ankle.*—1. The anterior and middle fasciculi of the external lateral ligaments are derived from the extensor brevis digitorum, as it slips down from the fibula to the dorsum of the foot. 2. The posterior fasciculus of the same represents the lower end of the peroneo-tibial muscles. 3. Of the anterior annular ligaments, the superior is due to thickening of connective tissue consequent on flexion of the limb, and belongs to the leg; the inferior is the property of the tarsus, and is derived originally from the remains of an old attachment of the extensor longus digitorum to the tarsus. The oblique bar at the lower end of the tibio-tarsus in birds is homologous with this; it is an adventitious ossification, and not an essential element of the tarsus.

IX. *Foot.*—1. The long plantar ligament represents the tendon of the gastrocnemius. The continuity of this ligament with the tendo Achillis is evident in the human fœtus, as late as the sixth month. After the seventh month, the tendon becomes divided by extra growth occurring at the posterior extremity of the os calcis. 2. The calcaneo-scaphoid ligament is the representative of the calcaneo-metatarsal muscle in the frog.

BERTRAM C. A. WINDLE, M.D.

ARTICLE 5032.

FEHLEISEN ON THE INFLUENCE OF DISTENSION OF THE RECTUM ON THE POSITION OF THE BLADDER.

IN the *Archiv für Klin. Chir.*, Band xxxii., Heft 3, Dr. Fehleisen, of Berlin, details the results of some experiments made to determine the relative parts played by distension of the rectum and of the bladder, in elevation of the latter viscus by Petersen's method. At the seventh Congress of the German Society of Surgery, Braune stated that by distension of the rectum of the cadaver, and subsequent median section after freezing, he had proved that the internal orifice of the urethra rises from behind the middle to the upper margin of the symphysis pubis, and that a considerable change is effected in the length and curvature of that which is commonly regarded as the fixed portion of the urethral canal. The influence of distension of the rectum on the position of the prevesical fold of peritoneum, passed over in silence by Braune, was first pointed out in 1878 by Garson, who was led by the results of his experiments to recommend plugging and fluid distension of the rectum in the operation of suprapubic lithotomy, with the object of avoiding with certainty wounding of the peritoneum. Two years later, Petersen published the results of a series of researches made in order to determine the influence of rectal distension on the position of the prevesical fold, and proved, as Garson had done, that the bladder may be elevated to such an extent as to be capable of being readily exposed above the pubes without injury to the peritoneum. In children, as the bladder is more elevated than in adults, the conditions of suprapubic section, as proved by Bergmann and Mannheim, are rendered still more favourable. Fehleisen, in experiments made at the suggestion of Bergmann, found on section of frozen bodies that in ordinary conditions, when the rectum is empty and the bladder contains a moderate quantity (300 cubic centimètres), the latter viscus is rounded, its fundus is directed backwards and on a level with the deepest part of the pouch of Douglas, the internal orifice of the urethra is situated about 4 centimètres behind the symphysis pubis and 1 centimètre above its lower margin, and the prevesical fold of peritoneum reaches downwards to a point about half a centimètre above the upper margin of the symphysis. When the rectum is distended (480 cubic centimètres) and the bladder contains but a small quantity of fluid (200 centigrammes), the internal orifice of the urethra is moved to a point about 4 centimètres above the lower margin of the symphysis, and rather less than 1 centimètre behind it. The bladder is no longer round, but presents the form of an irregular pentagon. The pouch of Douglas is obliterated, and the prevesical peritoneal fold is elevated to a line about 4 centimètres above the upper margin of the symphysis. Distension of the bladder alone, the rectum being empty, has very little influence on the position of the prevesical fold, and acts backwards and downwards much more than in the direction forwards. On injection of 630 cubic centimètres of

fluid into the bladder, the anterior fold of peritoneum does not stand higher than a level of about 2 centimètres above the upper margin of the symphysis. On the other hand, when both bladder and rectum are distended, the former by 420 and the latter by 560 cubic centimètres, the prevesical fold is elevated about 8½ centimètres above the upper margin of the symphysis, and the internal orifice of the urethra 2½ centimètres above the lower margin.

Dr. Fehleisen's investigations show that, in order to raise the prevesical fold far above the symphysis, it is necessary to distend the bladder as well as the rectum. When both bladder and rectum are empty, this fold is placed about 2½ centimètres below the upper margin of the symphysis. By a maximum distension of the bladder alone in a healthy subject, the fold can be raised to a point about 2 centimètres above the upper margin of the symphysis. In order to effect this, it is necessary to inject at least 630 cubic centimètres of fluid; but in a pathological condition of the bladder it would be dangerous to attempt to introduce any such quantity. It would, therefore, be difficult to perform the high operation with safety after fluid distension of the bladder alone. Injection into both bladder and rectum is regarded as the preferable method, and it is recommended that the bag be introduced into the intestine as far as the promontory of the sacrum, and then distended by the injection of from 450 to 500 cubic centimètres of water, so as to occupy the concavity of the sacrum, and to press upwards the prostate and the fundus of the bladder. Then an injection of about 200 cubic centimètres of fluid into the bladder will be found sufficient to raise the prevesical fold to a point about 4 centimètres above the symphysis. Fehleisen holds, in opposition to Petersen, that it is better to inject more fluid into the rectum than into the bladder. By distension of the rectum, the bladder is elevated and pushed forwards, and the inner orifice of the urethra is carried nearer both to the posterior surface and to the upper margin of the symphysis. By distension of the rectum, also, the bladder is not only elevated but elongated, its posterior wall is brought nearer the front of the abdomen, the viscus is much more accessible from above, and the surgeon can obtain a better view of its interior and operate more readily, especially in cases of vesical tumour.

W. JOHNSON SMITH.

ARTICLE 5033.

REBER ON HAMAMELIS VIRGINICA.

B. REBER, the editor of *Der Fortschritt*, Dec. 5, 1885, No. 23) publishes a paper on the properties and the employment of Hamamelis virginica.

After giving an exhaustive literary survey of all the pamphlets and papers treating of this plant up to the present time, he continues:—The witch-hazel, called by Linnæus, not very appropriately according to the present view of the leading American botanists, hamamelis virginica, is more or less noticed in all botanical handbooks. A. W. Chapman mentions this plant in his *Flora of the Southern United States*. De Candolle, in his *Prodromus Systematis Naturalis Regni Vegetalis*, ranges it in the order of the Hamelideæ of the tribe Hamameleæ. At present, however, it is placed among the Saxifrage family, in which it is also placed by Baillon in his *Histoire des Plantes*, who informs us that the plant contains tannin and an acrid oil, and possesses moreover astringent properties.

The scanty number of species of this family mostly form shrubs, rarely trees, and are distributed over Northern America, China, Japan, India, and Persia; some are likewise met with at Madagascar and at the Cape. The species in question, however, is very common on marshy banks, especially at the east side of rivers throughout New England, Pennsylvania, and Virginia; on the banks of the Mississippi, and from the Gulf of Mexico to Canada. All naturalists point out that the witch-hazel is employed by the aboriginals for magic purposes, especially the young twigs for discovering hidden springs. This corresponds to similar superstitions on the mysterious power of our common hazel-nut (corylus avellana) still lurking in some countries of Europe. The hamamelis virginica meets popular imagination by some of its qualities. Several naturalists—namely, Bigelow, Emerson, &c.—point out the very peculiar appearance of this plant during the different seasons, particularly in the late autumn, when, at the same time, it sheds the leaves, bears fruit, and blossoms, and, amidst the glorious autumn tints of the wood, its clusters of beautiful yellow flowers will show, continuing from the fall of the leaves until late in November.

The shrub, sometimes attains the height of 20 feet, and the tree mostly forms immediately after germination several twisted stems from 5 to 6 inches in diameter. The younger branches have a smooth brown bark invested with red down, whilst the older branches are rugged and cracked, and of grey colour. The alternate sessile leaves resemble those of our common hazel; they are unsymmetrical at the base, dentate, when young, covered with stellate hairs, and of deep dark-green colour, with raised small spots underneath.

The flowers appear in the axils of the leaves or sessile on the branches, in small globular clusters, always supported by two or three bracts forming a kind of calyx. The four-parted imbricated sepals of the calyx surround the long ligulate petals of the corolla. Four of the eight stamens arise from the calyx, and four are inserted with the petals. The compound ovary supports two curved pistils. Many blossoms are sterile. The dry capsular fruit adheres to a bony pericarp, is of brown colour, and resembles our hazel-nut. It opens at the apex into two shells, each enclosing a glittering black kernel with a white hilum. The embryo is white, and rich in albumen and oil. The cotyledons are oblong and leaf-like.

The bark as well as the flowers emit, when fresh, a peculiar characteristic odour. On chewing, they are at first bitter and astringent, and leave a long-lasting after-taste.

The plant contains no alkaloids, but, besides a wax-like substance, tannin, gallic acid, red dye, salts of lime, iron, and potassium, and an essential very aromatic oil, in which particularly the leaves are very rich. This oil is of greenish yellow colour, is very volatile, possesses in the highest degree the characteristic smell of the hamamelis, and probably forms the active constituent of the plant.

The hamamelis has always been in America and India one of the most popular empiric remedies, especially for tumours, ulcers, and all kinds of skin-diseases, for which purpose poultices of the powdered bark are employed. Proper scientific observations

on the action of this plant have been made only within the last twenty years, but are at present very numerous.

The hamamelis has been tried in various diseases, and, according to report, with good effect in puerperal hæmorrhage, and in hæmorrhage from piles and varicose veins. This styptic action appears to be the most valuable property of the hamamelis.

Among its pharmaceutical preparations, the fluid extract and an alcoholic distillate take the first rank. There is barely a home or a family medicine-chest in the United States of North America in which may not be found this distillate of hamamelis (known there by the name of 'Pond's Extract'). This extract contains 10 per cent. of alcohol, and, being of a somewhat disagreeable smell, it is prescribed in the following form : Extracti fluidi hamamel., syrup. cort. aurant., āā ʒjss. ; tinct. vanillæ ɱxx. The dose is four to ten teaspoonsful daily. Like all fluid extracts, that of hamamelis contains one gramme of the plant to one gramme of the extract.

The preparation sold under the name of 'hazeline' is the distillate from the fresh bark of the hamamelis virginica. Besides this, there is a tincture in the proportion of one to ten in use. The French prescribe it in the following form : extract of hamamelis, alcohol, and water, equal parts. In America also a dry extract, under the name of hamameline or hamamelidine, is used in pills, from 0·03 to 0·13 gramme (half a grain to two grains). Besides this also a decoction of the plant (30 : 500), and in hæmorrhoids an ointment consisting of three parts of the tincture to thirty parts of fat, or suppositories with one centigramme (one-sixth of a grain) have been prescribed.

All the physiological and therapeutical experiments with the various preparations of hamamelis show that this remedy may be employed without injurious effects, even in large doses, and for a long time. Not a single case of poisoning has yet been known. But all observations prove the peculiar action of this remedy on the blood-vessels.

Ferd. Adalb. Junker, M.D.

Article 5034.

ORD ON THE HEAT OF FEVER.

In the *Brit. Med. Jour.*, Oct. 1885, p. 782, is published an excellent address by Dr. Ord on 'The Heat of Fever.'

The author starts with the question as to how the increased heat of the body in fever is brought about. It is generally stated that this is simply a matter of increase of combustion ; that the oxidation-processes of the body go on with undue vigour in fever ; that the system is burning its candle at both ends, and that the two flames give more heat than one. For some years Dr. Ord has not been able to accept this theory, and an article on 'The Process of Fever' by Dr. Burdon Sanderson in 1875 greatly helped to bring about this change of thought in Dr. Ord's mind. Dr. Sanderson states how, from careful calculation, he concludes that although, as compared with a healthy individual when on fever-diet, the production of heat during fever is excessive, yet it is not by any means greater than the production of heat in health.

After a careful study of this article of Dr. Sanderson's, the increased combustion theory no longer satisfied Dr. Ord. Some have argued that the increase of heat in the body is brought about by retention ; but Leyden and Liebermeister have shown that, far from being retained, heat is discharged from the surface in larger quantities during fever than in health. As neither of these suggestions pleases the author, he draws attention to another possibility, and gives the following illustration to explain his theory. Suppose a metal basin containing water to be placed over a flame, and the water to be brought to boiling-point. If a thermometer be placed in the water, it will never rise above 212° F. as long as there is water left. This is a parallel to the marvellous heat-regulation of the body, which maintains it at a fixed temperature.

In the case of the flame, the heat is used up in turning water into steam. Now let oil be poured on the surface of the water ; the temperature rises in the water, as it would in the system on the retention-hypothesis. On the other hand, let the water evaporate entirely. Then the metal basin becomes heated indefinitely, and the thermometer rises in proportion. The author then asks—'Is it possible that the increased heat of fever may be brought about by the cessation of processes in which heat ought to be used up—either as motion, or chemical action, or other kind of energy ; so that, the process which may be represented by the boiling water ceasing to exist, like the water when boiled away, the heat generated for maintenance of the process overflows, and warms to excess the body, like the metal basin from which the water has evaporated ? Is the increment of heat of body in fever due not only to combustion or other disintegrative process thereto allied, but also to the persistence, in the form of heat, of energy which should have taken another form ?' This, the author thinks, is highly probable.

There are two processes ever going on in the body ; the building up of tissues on the one hand, their disintegration on the other. The disintegration of tissues is clearly attended by the liberation of heat. Their upbuilding is most probably attended by the consumption or disappearance of heat, which assumes some other form of energy, kinetic or potential. In fever, the changes produced in the body are exactly the reverse of those in health, and indicate that there is, first, a cessation of changes which should occur in health ; and, secondly, a production of changes not occurring in health. The idea which the author wishes to establish is, that the variations of chemical changes occurring in fever indicate the cessation, in various degrees, of that process of tissue-building which should in health use up heat, and which, ceasing in fever, leaves heat to run wild. These statements are based upon results obtained by Dr. Ord from experiments made upon growing fruit, the records of which the author gives in his address, and are most interesting.

In applying these experiments to the question of the causation of pyrexia and hyperpyrexia, the author refers to what Dr. Broadbent has written, viz. : 'If a theory of the febrile process is to be formed, it must be based upon a theory of the relation between the nervous system and the processes of nutrition and oxidation, and especially the latter.' Dr. Ord believes that, in the production of fever-heat, there is a first factor of increased oxidation, or combustion, or disintegration, setting free heat.

This, however, is not sufficient to account for all the increase of heat observed in pyrexia; but the further increment is furnished by heat going astray in default of correlative changes in metabolism. The nervous system is supposed to possess the power of inciting, on the one hand, to disintegration, on the other hand of controlling, the nutritive functions. What Dr. Ord suggests is, that in fever there is superadded to the combustions, which we recognise, atrophic influence of the nervous system, arresting processes in which heat should be transformed; and that the increasing temperature of fever is determined by increase of this inhibitory influence. With reference to treatment, the author states that in baths we have a means of attracting, as it were, the attention of the nervous system and drawing it off from certain pernicious paths upon which it has embarked. The application to the whole surface of the body of water, at a different temperature from that of the body, acts in fever by exerting a reflex inhibitory influence upon the nervous system, leading to a relaxation of its trophic constraint. RICHARD NEALE, M.D.

ARTICLE 5035.

BUCHNER, EHRLICH, AND OTHERS ON THE CHEMISTRY OF THE URINE.

BUCHNER has proposed the following *modification of Fehling's method for sugar.* Many saccharine urines only give an opalescent yellowish-red coloration, and no red precipitate of cuprous oxide, when heated with Fehling's solution, making therefore the presence of sugar appear doubtful. In such cases, the urine is to be boiled with excess of cupric sulphate solution (1 : 10). The greyish-green precipitate is to be separated, and potassic hydrate, or some Fehling's solution, to be added to the filtrate, on boiling which the red suboxide of copper will be deposited, if even a small proportion of sugar be present.

Ehrlich has proposed *paradiazobenzol-sulphonic acid as an urinary test.* It may be readily prepared by adding a few fragments of sodic nitrite to a watery solution of sulphanilic acid, acidulated with 6 to 10 per cent. of pure nitric acid. Normal urine treated with this reagent shows only a slight change of colour; but in certain diseased conditions the reagent gives the urine a carmine or purple-red colour, well marked in the froth. The urine of pulmonary phthisis, typhoid fever, and scarlatina gives this reaction. It is probably due to the presence of pyrocatechin or some other phenyl compound; but, as Penzold has shown, the same reaction may be given by acetone, lactose, saccharose, and glucose, with this reagent in presence of alkalies.

After the *ingestion of chloral, urochloralic acid is eliminated.* It can be thus separated (Kultz). Agitate the urine with a mixture of ether, alcohol, and sulphuric acid, and evaporate the extract thus obtained; the dissolved residue is to be precipitated with neutral, and then with basic lead-acetate. Decompose with hydric sulphide, and, having removed the lead sulphide and the excess of hydric sulphide, neutralise with baric hydrate and evaporate to crystallisation. Decompose the baric salt with dilute sulphuric acid, evaporate the filtrate to a syrup at a low temperature; and, when the drying has been completed in a desiccator, exhaust with ether, and from the ethereal extract the urochloralic acid crystallises out.

Phenol-, cresol-, and brenzcatechin sulphonic acids are normally present in very small proportions in urine, but in *diabetes* large quantities of *indoxyl- and skatoxylsulphuric acids* have also been found. When they are sufficiently abundant, strong nitric acid will colour the urine red, and ferric chloride will give a deep purple or violet-red tint. In many cases of diabetic urine, Hallervorden has also observed increased quantities of ammonia, and Stadelmann in one case obtained a considerable amount of *crotonic acid.* But, as Minkowsky states, this acid did not exist ready formed in the urine, but was produced from the oxybutyric acid extracted. When this latter body becomes oxidised, it yields acetyl-acetic acid; and this acid, and the acetone frequently met with in the urine of diabetes, are probably thus derived.

The urine voided after the ingestion of balsam copaiba gives a red colour on the addition of hydrochloric acid, and an absorption spectrum of three bands. When the urine is heated, the band in the blue disappears, and the fluid assumes a violet tint. The action is accelerated by the addition of bleaching powder.

The influence of alcohol and of morphine on physiological oxidation has been studied by Sumanowsky and Schoumoff. Adopting Sieber and Nencki's suggestion, the oxidation of ingested benzol to phenol was taken as a measure of the systemic oxidation. The elimination of phenol lasts from two to four days. In the case of a dog which normally excreted 0·283 to 0·248 gramme of phenol for every gramme of benzol ingested, the administration of 0·3 gramme of alcohol per kilogramme of body-weight reduced the elimination to 0·165 gramme; while an increase in the alcohol to 3·01 grammes per kilogramme reduced the phenol eliminated to 0·125 gramme. On the other hand, the administration of 0·02 gramme of morphine hydrochlorate per kilogramme increased the phenol to 0·309 gramme. In a man, aged 27, two grammes of alcohol per kilogramme of body-weight reduced the elimination of phenol, after the ingestion of two grammes of benzol, from 0·82 to 0·33 gramme. The morphine therefore seems to increase the oxidising powers of the system, while alcohol correspondingly decreases them. The quantity of urea excreted appears also to be diminished by alcohol, although the excretion of urea cannot be taken as a measure of organic oxidation. Diminished oxidation, produced by constriction of the air-passages, which increases the elimination of urea, lessens the amount of benzol oxidised to phenol in the system. In none of these cases, it may be said, could more than traces of the alcohol ingested be discovered in the urine.

Plaster filters separate the albumen from urine; but, if the filtration be continued for a sufficient time, the pores become saturated with the albumen, and permit albuminoids to pass. The plaster forms combinations with certain albuminoid substances, but in removing colloids from liquids the action is mechanical, by virtue of its capillary structure. Plaster filters likewise separate any micro-organisms present, as also ferments generally, whether organised or soluble. Porcelain filters, it may be said, are not open to this objection.

The opportunity may here be taken to refer briefly to an *artificial colloid closely resembling*

albumin, which Professor E. Grimaux has succeeded in obtaining by the action of phosphorus pentachloride on metamidobenzoic acid. When the mixture is heated for some time a residue is left, which is readily reduced to a white friable powder; it is then to be moistened with ammonia, when it swells and dissolves slowly, forming a liquid that filters with difficulty. Evaporated *in vacuo*, it dries up into a yellowish translucent mass, closely resembling serum-albumin in appearance as well as in most of its reactions. T. CRANSTOUN CHARLES, M.D.

ARTICLE 5036.

HALLIBURTON ON THE PROTEIDS OF SERUM.

THE proteids of serum are generally regarded as two in number. One of them is known as paraglobulin, serum-globulin, or fibrinoplastin, and the other as serum-albumin or serine. This paper (*Journal of Physiology*, No. 3, vol. v.) deals chiefly, first with the temperature of heat-coagulation of these proteids, especially of serum-albumin; and, second, with their precipitation by means of certain salts.

Hammarsten states that the temperature of heat-coagulation of serum-globulin varies between 68° and 80° C., the average being 75° C.; and the same average is given by Frédéricq, while Hoppe-Seyler gives that of serum-albumin as 70° to 73° C.

A process of fractional heat-coagulation was adopted, and great care was taken to make the comparison and examinations under as nearly similar conditions as possible. In order to obtain complete precipitation at any given temperature, the liquid was always rendered faintly acid; and to obtain complete precipitation at any given temperature, it was kept at that temperature for at least five minutes. The mistake of taking a dense opalescence for a precipitation was also carefully guarded against. The fractional heat-coagulation process was applied to serum in a twofold way—to serum itself, and to the filtrate after the separation of the globulin by saturation with magnesic sulphate. The precipitate, after being well washed with a saturated solution of the sulphate, was then dissolved in distilled water. Two solutions were thus obtained, one of serum-albumin in saturated solution of sulphate of magnesia, and the other of serum-globulin in weak magnesic sulphate. To each of these, the same process of fractional distillation was applied as with the serum itself. As the result of these experiments, the author concludes that the albumin of serum is not a single proteid, but consists of three separate proteids, coagulating at the temperatures of about 73°, 77°, and 84° C. respectively.

TEMPERATURE OF COAGULATION (CENT.).

Fibrinogen.	Serum-globulin	Serum-albumin		
		α	β	γ
Dog-plasma, 56°	75°	70°–73°	77°	82°
Dog-serum	75°		77°	85°
Man-serum	74°	73°	74°	84–85°
Monkey-plasma, 56°	73°	69°	77°	84°
Monkey-serum	76°		77°	84°
Pig-serum	75°	72–73°	77°	84°
Rabbit-plasma, 56°	75°	73°	77°	84°
Rabbit-serum	76°		77°	84°
Horse-serum	75°	—	77°	84°
Ox-serum	73°	—	77°	84°
Sheep-serum	75°	—	77°	84°

While in some animals, as seen in the above table, the serum-albumin can be differentiated into three proteids, in others, as the horse, ox, and sheep, only two of these are present. The amount of albumin-coagulum at the higher temperature appears to be considerably less than that coagulating at a lower temperature.

The conclusions drawn from experiments made to ascertain the effect of the presence of acids and of alkalies upon the coagulation-point are as follows. [On p. 164 the number 73 is surely a *lapsus* for 64, as expressing the number of grammes of oxalic acid to be dissolved in the preparation of the normal solution.]

If the liquid be alkaline, the precipitate, if it appear at all, is not flocculent, and its separation is incomplete, the temperature, however, varying but little with the amount of alkalinity; if the liquid be only faintly acid, much the same result is obtained; but with a greater degree of acidity, up to a certain point, precipitation is complete and filtration easy, the coagulation-point falling slightly, the greater the amount of free acid present; while, with a still greater degree of acidity, the precipitation may at last occur in the cold.

As to the precipitation of albumin by certain salts, the author confirmed Hammarsten's statement that magnesic sulphate is a sure agent for separating the serum-globulin completely from serum; but the saturation with the sulphate is not effected until it has been added in excess and well shaken for at least three hours.

For globulin solutions containing 1 per cent., this salt may be used as a qualitative test by pouring the globulin solution upon a saturated magnesic sulphate solution in a test-tube, when a white cloud will appear at the line of junction of the liquids. Globulin, as we have seen, is precipitated from serum by saturation with magnesic sulphate, and the serine is likewise precipitated by the same salt if the filtrate be subsequently saturated with sodic sulphate, this being due to the formation of a double salt, sodio-magnesic sulphate. Sodic nitrate acts like the sulphate in precipitating the globulin; but if the globulin have already been separated from serum by means of the sulphate, a subsequent saturation of the filtrate with the sodic nitrate will throw down the serum-albumin, this also being possibly due to the formation of a double salt.

Ammonia-alum serves as a very ready and rapid precipitant of serum-albumin after the globulin has been removed by magnesic sulphate. Sodic carbonate and acetate likewise both separate globulin from serine by precipitation. Sodic chloride, when added to serum, produces an abundant precipitation; but, when added after the globulin has been removed by saturation with magnesic sulphate, no precipitation occurs. It should be noted, however, as Hammarsten has pointed out, that the precipitation of globulin by the chloride is not complete. Potassic acetate and phosphate were also found to separate the proteids from serum in uncoagulated form; and calcic chloride in an insoluble form.

T. CRANSTOUN CHARLES, M.D.

DR. SUTCLIFFE HILL, of Saxton's Hill, Vermont, communicates the following prescription for corns to the *New England Medical Monthly*:—℞. Extract of cannabis Indica, 15 grains; salicylic acid, 30 grains; collodion, ℥j. Apply with brush. He has found it very efficacious in removing those troublesome excrescences.

SURGERY.

RECENT PAPERS.

5037. KING.—A Case of Wound of the Vertebral Artery. (*Lancet*, Nov. 1885, p. 993.)

5038. PHILLIPS.—Graves's Disease Cured by Galvanism. (*Brit. Med. Jour.*, Nov. 1885, p. 964.)

5039. HUTCHINSON, JONATHAN, JUN.—Sprains of the Elbow in Children. (*Annals of Surgery*, Aug. 1885.)

5040. NEVE.—Osteotomy in Extensive Deformity after a Burn. (*Lancet*, November, p. 896.)

5041. RIVINGTON.—Wound of the Left Common Carotid Artery by a Fish-bone. (*Brit. Med. Jour.*, October, p. 832.)

5042. VOSKRESENSKI.—Cases of Large Urethral Calculus. (*Lancet*, October, p. 634.)

5043. MEYER.—Cure of a Lingual Ulcer of Long Standing by Galvanism. (*Deutsche Med. Wochensch.*)

5044. FERRARI, A.—Experiments on the Transplantation of Bone. (*El Siglo Medico*, Nov. 22, 1885.)

5045. FARGIN AND ASSAKI.—Regeneration of Tendons.

5046. ENGLISCH.—Albuminuria in Strangulated Hernia. (*Centralbl. für Chir.*, Nov. 1885.)

ART. 5037. *King on a Case of Wound of Vertebral Artery.*—In the *Lancet*, Nov. 1885, p. 993, Dr. King records the case of a young man, aged 25, who received a deep wound below the left mastoid process. On examination, it was found that some large artery was wounded, and immediately the wound was enlarged so as to admit the finger. One of the transverse processes was fractured; and, by placing the tip of the forefinger between the two transverse processes, the hæmorrhage was controlled. The whole cavity was then firmly and evenly plugged with strips of oiled lint, a graduated compress applied over all, and a grain of opium given every six hours. On the third day the temperature rose to 103° F., and to 104°·6 F. on the sixth day, but on removing the plug no hæmorrhage occurred, and there was no return of pyrexia. The patient made a perfect recovery in about four weeks from the time of the accident. [In the LONDON MEDICAL RECORD, 1884, p. 110, a similarly successful case of this injury is recorded.]

5038. *Phillips on Graves's Disease Cured by Galvanism.*—In the *Brit. Med. Jour.*, Nov. 1885, p. 964, Dr. Leslie Phillips records the case of a delicate lady, whose health broke down after several weeks' nursing. When seen by the author she suffered from cephalalgia and vomiting, with constant palpitation night and day. She spent her time in bed or on a sofa. The pulse ranged from 160 to 180 per minute. She was treated alternately with purgatives, digitalis, belladonna, bromide of potassium, and iron, without relief. On Aug. 15, galvanism was begun. The battery was applied for ten minutes every day for six weeks; at the end of this time she was so much better that the applications were only applied twice a week for a few days; then the patient went into the country. The author considers the case to have been one of Graves's disease. [That galvanism has a directly curative action in Graves's disease appears to be proved by the numerous cases recorded in sect. 1838 : 3 of the *Medical Digest*, besides several other cases that will appear in the Appendix.—*Rep.*]

5039. *Hutchinson on Sprains of the Elbow in Children.*—In the *Annals of Surgery*, Aug. 1885, Mr. Jonathan Hutchinson, jun., contributes a paper 'On Certain Obscure Sprains of the Elbow in Young Children.' The author has made several experiments on the dead body, and found that the orbicular ligament of the radius had slipped up, with or without rupture of the suborbicular membrane. For reduction he advises flexion of the elbow and pronation of the hand, when the ligament again slips down into its right place. The accident only occurs in children under six years old, and is invariably produced by raising them sharply or dragging them by the arm, the hand being in a condition of supination. Mr. Hutchinson is the first surgeon who has been able to settle the exact nature of this lesion. He has also put forth his views on the subject in the *British Medical Journal* of Jan. 2, 1886.

5040. *Neve on Osteotomy in Extensive Deformity after a Burn.*—In the *Lancet*, November 1885, p. 896, Mr. Neve records the notes of a case of a Kashmiri girl aged 10, who had been severely burnt in the arm three years previously. When admitted into hospital, the hand was fixed to the shoulder by a web of cicatricial tissue, extending from about two inches below the acromion to the styloid process of the radius. There was also a large indolent ulcer over the elbow. The author decided to perform the following operation. The ligaments of the elbow joint were cut through, and the periosteum stripped from the lower three inches of the humerus, and the bone removed for that distance. The proximal four inches of both radius and ulna were then removed in the same manner. The ends of the humerus and ulna were fixed by wire sutures, and the incision closed. The deep incision healed by first intention. In five weeks the elbow became firm, and powers of flexion, extension, pronation, and supination, began to be exhibited. The patient recovered with an useful and scarcely deformed limb.

5041. *Rivington on a Case of Wound of the Left Common Carotid Artery from a Fish-bone Swallowed.*—In the *Brit. Med. Jour.*, October 1885, p. 832, Mr. Walter Rivington records the case of a boy aged 9 years, who was admitted into hospital. Six days before admission, he had swallowed a plaice-bone. When admitted, his symptoms were pyrexia, stiffness of the neck, œdema of the upper eyelids, profuse salivation, and a small tender lump on the left side, opposite the cricoid cartilage. Three days afterwards, he had two attacks of hæmorrhage from the mouth. Mr. Rivington diagnosed wound of the left carotid artery from penetration of the fish-bone, and immediately cut down and tied the artery above and below the seat of injury. The fish-bone was found in the centre of a clot. The patient lived ten days after the operation, dying from abscess of the brain on the left side, which had probably begun to form before the operation.

5042. *Voskresenski on Cases of Large Urethral Calculi.*—In the *Lancet*, October 1885, p. 634, attention is drawn to two cases of urethral calculi described by Voskresenski. The first patient was a young man, aged 17, who was suffering from strangury and uræmia. Immediately within the anus a firm tumour could be detected by the finger. This man died from uræmia. On *post mortem* examination, a calculus was found 2⅜ inches long and 1¾ inches in diameter, situated half in the bladder and half in the prostate. The second case was that of a young man aged 18, who had a tumour of the scrotum, which had gradually increased in size from childhood. This man suffered from hæmaturia and strangury. A calculus was detected in the neck of the bladder. This was extracted, and weighed

ten ounces. It was situated in a cavity communicating with the urethra. RICHARD NEALE, M.D.

5043. *Meyer on Cure of a Lingual Ulcer of Long Standing by Galvanism.*—At a session of the Berlin Medical Society (*Deutsche Med. Wochensch.*), Dr. Moritz Meyer introduced a patient, in whose case he had completely cicatrised an ulcer of the tongue of nine years' standing by the application of the anode of a galvanic current. The woman, aged 51, had during labour bitten her tongue in so shocking a manner, that no treatment had been successful. For years she had been able to take only liquids, and the pain was so great as to 'nearly drive her mad.' This occurred in June 1876. In June 1884, she applied to Dr. Meyer. The latter found, besides various superficial fissures, an ulcerated grooved surface penetrating the tissue, more or less extending from near the tip parallel with the sides to the root, as well as other ulcerated surfaces to the right and left of the tip, which was itself completely fissured. The woman was made to hold the larger cathode in her hand, whilst a narrow anode was brought to touch the various sores on the tongue for about half a minute, the current being strong enough to be perceptible without being painful. The result was so soothing for several hours, and the appearance of the tongue improved so much, the more superficial ulcers appearing to be cicatrising, that Dr. Meyer determined to continue this treatment. At last, after 190 such applications, the woman was completely cured, being able to eat solid food without pain, her utterances being distinct and her sleep sound. Dr. Meyer invites laryngologists to test this process, which they would be able to localise, and the strength of which they could modify at any moment by varying the number of elements.

JOHN ELLIOTT.

5044. *Ferrari on the Transplantation of Bone.*—Dr. Ferrari arrives at the following conclusions. 1. Pieces of bone inserted in the diaphyses of long bones may become completely united to them, and continue to live. 2. They not only continue to live, but also grow. 3. The insertion of bone gives results in whatever position the piece of bone is applied. 4. The re-union or grafting takes place by a true vascularisation, which forms between the piece inserted and that to which it is applied. 5. Around the piece inserted, a bony, periosteal, and medullary callus is formed. 6. As in a fracture, this callus has only a temporary vitality. 7. After the lapse of a certain time, the periosteal and medullary callus is reabsorbed, and the engrafted bone is only to be recognised by its greater vascularity. 8. The grafting takes place whether the piece inserted be completely adapted to the margin of the wounded bone or not; but in the latter case a longer time is required for union. 9. For successful insertion a rigorous antisepsis is necessary. 10. A favourable result is obtained even when the smallest pieces are inserted. 11. In the case of insertion of small pieces of bone, if partial suppuration of the wound occur, some small pieces may yet adhere if the suppuration do not extend to the parts of the bone inserted which touch the medulla. 12. For the complete success of the insertion, apart from antiseptic medication, moderate pressure must be employed to maintain contact between the medulla and the piece of bone transplanted.

G. D'ARCY ADAMS, M.D.

5045. *Fargin and Assaki on the Regeneration of Tendons.*—MM. Fargin and Assaki, in order to discover the best surgical means of obtaining the regeneration of tendons which have been shortened either by injury or by an operation, tested on animals the method tried by Gluck on the human subject, of joining two portions of tendon by a bridge formed of several threads of catgut. They excised a piece of the tendon of Achilles, observing all the antiseptic rules for ensuring reunion by first intention. After the operation, the animal did not walk quite naturally; it dragged the foot slightly. Forty-nine days subsequently the animal was killed, and it was seen that the catgut was replaced by a fibrous formation, which resembled that of the tendon without being a true tendon. Another animal, operated on in the same way, was killed one hundred days later; it showed that the newly formed tendon was further advanced in structure. In both animals the catgut threads were absorbed, and had evidently directed and facilitated the regeneration of the tendon. These experiments encouraged MM. Fargin and Assaki to extend their experiments. They again excised portions of the tendon of Achilles, and, instead of filling up the hiatus with catgut thread, they grafted on fragments of tendon taken from other animals of the same kind. In another series of experiments, they grafted fragments of tendons removed from animals of other species. On rabbits they grafted tendinous portions removed from sheep, dogs, ducks, fowls, turkeys; on sheep, dogs, &c., tendinous portions removed from other animals. By these means the experimentalists observed that reunion by first intention took place, notwithstanding the difference of species and of organisation. These experiments evidently indicate that surgery has a valuable aid in animal grafting. When in human subjects there is loss of tissue, and reunion by first intention is impossible, grafting should always be done from the tendons of animals nearest to man in the animal scale. It is also of the highest importance, that the most rigorous antiseptic measures should be observed.

5046. *Englisch on Albuminuria in Strangulated Hernia.*—J. Englisch, in the *Centralbl. für Chir.*, Nov. 1855, publishes the history of twenty-nine cases of strangulated hernia treated by taxis, and of twenty-five operated on. In the first series he found albuminuria ten times in the urine, in the second twenty-two times. In thirteen cases of hernia, accompanied by inflammation, albuminuria appeared twice. Albuminuria appears as soon as intestinal occlusion reaches a certain period, and presents certain lesions; the more marked is strangulation, the more evident is albuminuria. In partially strangulated hernia it is barely present. When the omentum and appendices are strangulated, or a filled hernial sac is inflamed, albuminuria is altogether absent. When there is gangrene of the intestine, albuminuria is very evident; it decreases slightly after operation. In fatal cases it is more abundant. Urine decreases in proportion as albumen increases. Englisch attributes death in strangulated hernia to renal disturbance, in those cases where the necropsy does not furnish any indication. The presence of albumen precludes any but a slight attempt at taxis, and herniotomy ought to be preferred. W. VIGNAL.

DR. TRASTOUR, of Nantes, treats obstinate cough with glycerine vapour. Five or six grammes of this liquid placed in a china capsule are heated over a spirit lamp. A quantity of vapour is given off, the inhalation of which greatly relieves phthisical patients.

MEDICINE.

RECENT PAPERS.

5047. HOLM.—Persistent Constipation. (*Lancet*, Dec. 1885, p. 1124.)

5048. PAVY.—The Clinical Aspect of Glycosuria. (*Brit. Med. Jour.*, Dec. 1885.)

5049. PALM.—A Case in which Four Tapeworms co-existed in One Person. (*Lancet*, Nov., p. 991.)

5050. PETCH.—A Case of Abscess of the Lung produced by Swallowing a Piece of Grass. (*Brit. Med. Jour.*, Nov. 1885, p. 1015.)

5051. TEALE, J. W.—Two Cases of Rectal Trouble Complicating other Ailments. (*Med. Times and Gazette*, Nov. 1885. p. 732.)

5052. BULKLEY.—Asthma as Related to Diseases of the Skin. (*Brit. Med. Jour.*, November, p. 958.)

5053. OLIVER, JAMES. — Cirrhotic Enlargement of Liver in a Female. (*Brit. Med. Jour.*, Oct., p. 786.)

5054. HARTLEY.—Hæmorrhagic Amblyopia cured by Dilatation of the Sphincter Ani. (*Med. Times and Gazette*, November, p. 733.)

5055. VONGRODSKY, J. A.—On a Case of Intestinal Obstruction, of Five Days' Standing, Cured by Effervescent Enemata. (*Proceedings of the Eastern Siberian [Irkutsk] Medical Society*, 1885, p. 100.)

5056. ROMERO.—Abscesses of the Concavity of the Liver. (*El Monitor Medico*, Sept. 1, 1885.)

5057. MACEDO, J. M.—Verruga Peruviana. (*El Monitor Medico*, Oct. 1 and 15, 1885.)

5058. PEREZ VALDÉS, R.—Intravenous Injections in Cholera. (*Boletin de Med. y Cirurg.*, and *El Siglo Medico*, Dec. 13, 1885.)

5059. Preventive Inoculation of Yellow Fever. (*El Siglo Medico*, Dec. 13, 1885.)

5060. MURGA, L.—Ferran's Anticholera Inoculations. (*El Siglo Medico*, Nov. 8, 1885.)

ART. 5047. *Holm on Persistent Constipation.*—In the *Lancet*, Dec. 1885, p. 1124, Mr. J. Holm records a case of persistent constipation treated by medical gymnastics. A gentleman, aged 24, came to the author complaining of most obstinate constipation, which had lasted for five years, in spite of various kinds of treatment. He attended daily for four months at the author's gymnasium. The first fourteen days passed without any action of the bowels. On the fifteenth day, a scanty relief was obtained by the help of an enema, and in a few days a stool was passed without the aid of an enema. The motions then occurred naturally at intervals, first of ten, then of eight days. The intervals gradually diminished, and, at the end of the third month, the bowels were perfectly regular. Some months afterwards, the patient reported himself as being wonderfully well, the bowels acting like 'clockwork.' The various exercises used consisted chiefly in passive and active movements, with firm and deeply directed frictions and vibrations acting on the abdominal viscera.

5048. *Pavy on the Clinical Aspect of Glycosuria.*—In the *Brit. Med. Jour.*, Dec. 1885, Dr. Pavy remarks that cases of diabetes occur when the sugar entirely disappears from the urine, even though the patient be not under a restricted diet. In some cases, sugar may be present for a few hours only; one instance is noted in which a gentleman passed a quantity of sugar after having eaten marmalade, the glycosuria being due, no doubt, to the food containing more sugar than was able to be eliminated. Diabetes insipidus and mellitus may exist together. A patient passing large quantities of urine, out of all proportion to the amount of sugar present, may be put upon diabetic diet, and the sugar will entirely disappear, but still an excessively large quantity of urine is passed. A case is noted where diabetes mellitus was followed by diabetes insipidus, the latter ultimately disappearing. With regard to the physical condition of organs in this disease, Dr. Pavy has found hypertrophy of the liver in a sufficient number of cases to warrant the supposition that there is some connection between the two. So many cases of ataxia are associated with diabetes, that there seems to be also a connection between them. Sometimes they come on together, sometimes the ataxia precedes the diabetes, or *vice versâ*. Sometimes pains and manifestations of perverted sensibility are noticed without ataxia. Another disease seen in connection with diabetes is exophthalmic goître. Dr. Pavy does not believe in the theory of 'acetonæmia,' but believes that the comatose condition arises from a deprivation of power in certain nerve-centres, and thus fatigue or anything which tends to throw the patient off his balance will produce it. It is not due, therefore, to any direct poison in the blood. Acetonæmia is usually ushered in by a rapid pulse and a peculiarity in the breathing. The patient becomes drowsy; this deepens into a comatose state, terminating in profound coma and death. The presence of fat in the blood of diabetic patients is stated by Dr. Pavy to be a purely physiological condition, accounted for by the great amount of food they take, and the fatty nature of a large proportion of it. Albuminuria may co-exist for years, and when there is only a small amount of albumen in the urine it does not signify. Some cases go on, however, to well-marked Bright's disease; and generally, as this becomes established, the diabetes shows a tendency to subside.

5049. *Palm on a Case in which Four Tapeworms co-existed in One Person.*—In the *Lancet*, Nov. 1885, p. 991, Dr. T. A. Palm records the case of a German resident in Japan, who had suffered from tapeworm for over twelve years. Eighty minims of the ethereal extract of male fern were ordered to be taken after twenty-four hours' fast. Soon after taking the dose, he brought the author two heads and a large quantity of segments of tapeworm. Upon examining these, it was found that the segments belonged to more than two worms. The patient would not believe this, and did not take any more medicine. After some weeks, however, he again sought advice, and took another dose of the male fern. This time, only one head came away, with a number of segments. Later on, he was again obliged to resort to treatment, which resulted in bringing away a fourth head.

5050. *Petch on a Case of Abscess of the Lung produced by Swallowing a Piece of Grass.*—In the *Brit. Med. Jour.*, Nov. 1885, p. 1015, Dr. R. Petch relates the case of a little girl, aged 3½ years, who was subject to attacks of bronchitis. One day she was in the fields with her mother, who suddenly noticed that the child was choking, owing to a piece of grass behind her tongue; but, in consequence of the child's struggles, she was unable to get hold of it, and it seemed to be swallowed. For the next two or three days the child had a constant dry cough, and complained of her throat burning, with pain in the stomach. The cough continued for some days, but became less frequent. The child, however, began to lose flesh, and complained of headache and thirst. The pulse quickened to 130, and over the whole of

the left lung posteriorly râles could be heard. A few days later, she began to expectorate muco-purulent sputum; this soon became quite purulent, and very offensive. About six weeks after the first onset of symptoms, she coughed up a small piece of grass. A few days later, a projection was noticed between the fifth and sixth ribs in the axillary line; this gradually increased in size and burst, discharging a good deal of offensive pus, in which was found a piece of grass about an inch and a half long. After this the abscess gradually healed, and some weeks later the child was able to be removed to the seaside. [A somewhat similar case is reported in the *Lancet*, Jan. 1880, p. 89.—*Rep.*]

5051. *Teale on Two Cases of Rectal Trouble Complicating other Ailments.*—In the *Med. Times and Gazette*, Nov. 1885, p. 732, Mr. J. W. Teale records two interesting cases of rectal trouble. The first is that of a young man, aged 30, who was suffering from constant cough, night-perspirations, and loss of weight. It was feared that phthisis was threatened. In conjunction with Dr. Clifford Allbutt, it was ascertained that the patient had suffered for years from obstinate constipation, with painful defecation, for which he had been in the habit of taking powerful cathartics. On examining the bowel, a painful fissure, and an extremely tight sphincter, were found. The patient was put under ether, the sphincter was freely stretched, and he was kept in bed for ten days on slop diet. In a fortnight the bowels acted without pain, the cough was nearly well, and the night-sweats had gone. The patient soon made a complete recovery. The second patient was a clergyman, aged 50, who had been sent down to the seaside to brace up his shattered nerves. When seen by the author, he was a complete wreck. He complained of excruciating pains in his feet when he walked; he had constant diarrhœa, accompanied by severe hæmorrhage and pain. On examining the patient under ether, it was found that the sphincter ani was in a state of intense and acute spasm, grasping tightly some inflamed internal piles. The sphincter was freely dilated, and the piles were left to shrivel when the constriction was removed. The motions were afterwards passed without pain, and the patient was relieved as far as the trouble with the bowels went. By the aid of massage and salt baths he was gradually able to walk, and six months after the operation he returned to his duties in perfect health.

5052. *Bulkley on Asthma as related to Diseases of the Skin.*—In the *Brit. Med. Jour.*, November 1885, p. 958, Dr. Duncan Bulkley, of New York, contributes a paper on asthma as related to diseases of the skin. The term asthma expresses a definite condition of the bronchial tubes, spasmodic in its nature, nervous in origin, generally without discoverable pathological changes, but exhibiting clinical features of a decided and almost uniform character. The occurrence of asthma in connection with, or in those suffering from, diseases of the skin, may be looked upon in three lights: 1st, as a coincidence; 2nd, occurring as a secondary condition due to a reflex irritation from the skin; 3rd, they may both develop from the same cause, which may be either (*a*) nervous, or (*b*) hæmic. The latter source seems to suggest itself to the author as being the most reasonable. It is well known that the nervous element of many diseases of the skin is very striking, and it is quite conceivable that in certain instances a nervous cause may at one time induce a disease upon the skin, and at another may excite spasmodic irritation in the bronchial tubes. A careful clinical study of asthma shows that there is a close relationship between it and skin-affections, as regards the conditions of the systems associated with the affections—viz., dyspepsia, constipation, urinary and hepatic disturbances, &c. The paper concludes with the following deductions. 1. Asthma has been observed in patients with certain diseases of the skin, in such a manner as to indicate some occasional relationship between the two. 2. Asthma does not occur in more than about 1 per cent. of patients with diseases of the skin. 3. This occurrence of asthma in skin-patients cannot be looked upon as a coincidence, nor is the skin-disease to be regarded as a cause of the asthma; but both the skin and the bronchial difficulty depend upon the same internal cause, which may be nervous in origin, or may result from some altered condition of the blood.

5053. *Oliver on Cirrhotic Enlargement of the Liver in a Female.*—In the *Brit. Med. Jour.*, Oct. 1885, p. 785, Dr. James Oliver records the following case. A woman, aged 28, married ten years, no children, noticed a slight increase in the size of the stomach about four months before she came under treatment. The catamenia had always appeared regularly until about the time the swelling commenced. Lately the patient complained of sickness after meals, and a constant feeling of lassitude. She had lost flesh for the last twelve months, and at times suffered pain in the region of the liver, and under both shoulder-blades. Headache had been frequent for the last two months, and there had been diarrhœa. The patient's habits had been intemperate; she had taken two pints of beer daily, besides some spirits. The liver was uniformly enlarged, measuring nine and a half inches in the nipple-line, and five below the ribs; the lower margin, hard and regular, was felt below the umbilicus. The urine was thick, and of a deep colour; it contained lithates, bile-pigment, and a trace of albumen.

5054. *Hartley on Hæmorrhagic Amblyopia cured by Dilatation of the Sphincter Ani.*—In the *Med. Times and Gazette*, Nov. 1885, p. 733, Mr. R. N. Hartley records a case which illustrates the serious amount of amblyopia liable to be produced by frequently recurring hæmorrhages extending over a long period of time, and the value of free dilatation of the sphincter ani under ether. A man consulted the author on account of gradual loss of sight. Nothing could be detected to account for this, except a slight pallor of the discs. Mr. Hartley suspected his patient was suffering from loss of blood in some way or other, and found that for years he had never obtained an action of the bowels without loss of blood, which was often profuse. The patient was then examined under ether, and was found to have an enormously powerful sphincter ani; the internal fibres were like rigid rings extending for some distance up the bowel. The rigid sphincter was freely stretched with the fingers, until all sense of resistance had ceased. The swollen mucous membrane was seen to be covered with irregular ulcerated patches, which had no doubt caused the hæmorrhage. Three days after the operation, the bowels acted without medicine and without bleeding. Six weeks later, the patient was quite well, the bowels acted every morning without medicine, and the sight soon became perfectly restored.

RICHARD NEALE, M.D.

5055. *Vongrodsky on Effervescent Enemata in Intestinal Obstruction.*—Dr. J. A. Vongrodsky, of Irkutsk, details a case (*Proceedings of the Eastern Siberian* [*Irkutsk*] *Medical Society*, 1885, p. 100) of intestinal obstruction of five days' duration, where, after complete failure of purgatives and large enemata, the author resorted to effervescent injections repeated at intervals of several hours. After a few enemata, the patient passed a liquid stool, tympanites and fæcal vomiting ceased, and complete recovery followed. The enemata consisted as usual of two injections successively administered, one of them being made of a solution of three teaspoonfuls of tartaric acid in a glassful of water, and another of a solution of four teaspoonfuls of bicarbonate of soda in the same quantity of fluid.

V. IDELSON, M.D.

5056. *Romero on Abscesses of the Concavity of the Liver.*—In a clinical lecture, Dr. Romero gives several cases of abscesses of the liver, with interesting remarks on prognosis and treatment. In abscess opening by the bronchi, he says, prognosis is more favourable than when the abscess opens into the intestine. When the opening takes place spontaneously, the result is almost invariably fatal. Abscesses of the concavity of the liver are more fatal than those of the convexity, as might be supposed from the relations of the organ, which also account for the variety of the symptoms in these cases—such as piles, hæmorrhage, jaundice, deformity of the abdomen, œdema of the lower limbs, vomiting, indigestion, diarrhœa, the possibility of the abscess opening into the stomach, duodenum, transverse or ascending colon, or peritoneum. These abscesses may descend much, invading regions more or less remote, and show themselves in the superior part of the right iliac fossa, thus sometimes rendering the diagnosis very puzzling. Diagnosis is much more difficult in abscess of the concavity than in abscess of the convexity of the liver; in cases of subacute and chronic hepatitis especially. As soon as the existence of an abscess is made out, exit should be given to the pus. The cannula used should be of large size, as the pus is generally thick and grumous. The abscess should then be washed out with warm water, and, except in recent cases, iodine should be injected, and allowed to flow out again. The puncture should generally be repeated in eight days. If the quantity of pus be then smaller, and less thick and grumous, a favourable termination may be expected. The puncture may be even repeated a third time; but, if the symptoms indicate that the abscess does not tend to improve, it is better to favour the development of the adhesions initiated already at the points corresponding to the former punctures, and by the application of Vienna paste to procure an extensive longitudinal eschar. Afterwards the abdominal wall is to be divided as freely as possible, taking care that the incision do not pass the limits of the adhesions formed between the walls of the abscess and the abdomen. By this method only is there probability of arresting the extension of these abscesses and of the gangrene which frequently accompanies them.

5057. *Macedo on Verruga Peruviana.*—One of the first acts of the Academia Libra de Medicina, of Lima, has been to appoint a commission to study the Verruga Peruviana, a disease peculiar to Peru, and which appears intimately connected with the so-called fiebre de la Oroya, which proved fatal some years since to many of the labourers engaged on the Transandine Railway, and of which sporadic cases are still occasionally seen. The *Monitor Medico*, of Oct. 1, reports the sad death of a student of medicine, Daniel A. Carrion, due to self-inoculation with the blood from a verruga. On August 27 last, while in perfect health, and residing in the capital, he inoculated himself with blood taken from a verruga in the atrophic stage. After twenty-two days of incubation, the fever began with all its characteristic symptoms, causing his death on the thirty-ninth day from inoculation. His case is promised in detail in a future number. The verruga is endemic and peculiar to Peru; in certain localities it is especially prevalent, notably in the hill district of Huarochiri. The popular belief is, that it is caused by the drinking water. The period of incubation may vary from two or three weeks to a year, the appearance of the eruption being preceded by prolonged muscular and articular pains. During the progress of the Transandine Railway (Ferro carril de la Oroya) a severe pyrexia, which it was not possible to refer to any known nosological group, caused immense loss of life among the workmen; the fever was hence called Fiebre de la Oroya, from the locality in which it occurred, or Fiebre anemizante, because anæmia was the most constant and grave symptom. Medical men differed as to its cause; some attributed it to a miasmatic origin, since it appeared during the digging and removal of the soil; others, because the verruga prevailed in the same localities, thought that the virus, united or combined with the miasma, was the determining cause. Dr. Macedo maintained some years since (*Gaceta Medica*, Nos. 21 and 23, 1875) the etiological unity of verruga and Fiebre de la Oroya. That this theory is the right one the unfortunate student, Daniel Carrion, has proved at the sacrifice of his life. From his case, the following points seem to be established. 1. The dermatosis known as Verruga Peruviana is a general infectious disease. 2. It is inoculable, and is due to a micro-organism. 3. The period of incubation may be long; in Carrion's case it was three weeks. 4. The incubation before giving rise to the dermatosis may occasion an adynamic pyrexia of fatal prognosis, with all the symptoms of a profound alteration of the blood (leucocytosis or leucocythæmia).

5058. *Valdés on Intravenous Injections in Cholera.*—In the *Boletin de Med. y Cirurg.* for Dec. 13, Dr. Ricardo Perez Valdés publishes an interesting article on intravenous injections in cholera. He gives 46 observations, treated during the months of August and September in the Hospital del Sur of Madrid, with the following results: women, 19; died, 12; cured, 7; or 36·8 per 100; men, 27; died, 20; cured, 7; or 25·9 per 100. Dr. Perez Valdés comes to the following conclusions. 1. The intravenous injections of a sodic chloride-sulphate solution have always been harmless to the patient; in no case could any manifestly prejudicial influence on the course of the disease be attributed to them. 2. Of 46 patients so treated, one only suffered from phlebitis, which, however, presented no alarming symptoms; the small calibre of the vessel, and the consequent injuries caused by the introduction of the cannula, were the exceptional causes of this phlebitis. In the other cases no harm ensued, notwithstanding that two or three injections were occasionally made in the same arm. 3. A third of the patients submitted to this treatment recovered, though at the moment of operation their cases seemed absolutely hopeless. 4. The immediate

effects of the operation were always surprisingly favourable, so that Dr. Perez Valdés cannot understand how Gougenheim and others have had to renounce the injections from the terrible effects which they observed. 5. In all cases, life was prolonged for a longer or shorter time. 6. The convalescence of patients after injection was generally more rapid and less exposed to accidents than that of those not injected. 7. The treatment by intravenous injections must be considered as the most rational of the methods proposed in the algide period of cholera. It is possible that there may be at present some technical imperfections which diminish its good effect; but Dr. Perez Valdés believes that no physician can afford to ignore this method in the treatment of the algide stage of cholera, and that the objection made by some, that in practice it offers some difficulties of application, is not sufficient to invalidate its merit.

5059. *Preventive Inoculation of Yellow Fever.*—According to the *Siglo Medico* of Dec. 13, Dr. Meyrignac, of Panama, is inoculating for yellow fever, which is very prevalent among the workmen and employés of the Canal Company. Like Dr. Carmona, he employs the sediment of the urine of yellow fever patients, which contains the zoöspores of the peronospora lutea, and injects it, dissolved in distilled water, with a Pravaz's syringe. Three hundred Mexicans were inoculated before the epidemic of 1884, and not one has died. Inoculation is generally followed by an abortive attack of yellow fever, the symptoms being benign, slight, incomplete, and of short duration. This modified yellow fever seems to confer complete immunity from a second attack. The Government of Mexico has recommended the practice, despite the opposition of its medical advisers.

5060. *Murga on Ferran's Anticholera Inoculations.*—Dr. L. Murga was commissioned by the provincial deputation of Seville to study on the spot Ferran's inoculations. For this purpose he joined Ferran in the early days of the epidemic, and accompanied him throughout the campaign. His opinion is, therefore, worth hearing. He gives the results of his experience in a paper of 119 pages. He accepts the morphology of the comma-bacillus described by Ferran, and recognises the comma-spirilla, the presence of spores, oögonia, and mulberry-shaped bodies, but has never seen the sudden ejection of the filament of protoplasm, nor the pollinide, nor the oöspheres. The pathogenic power of the commas in animals he regards as clearly demonstrated. Inoculation of a sufficient dose into the subcutaneous cellular tissue of animals produces a marked immunity to succeeding inoculations of even larger doses. Inoculation of a cubic centimètre of a pure cultivation of the comma-bacillus in the posterior region of each arm in a healthy man, produces characteristic local and general symptoms, which, in some cases, have a great analogy with the symptoms of cholera. The liquid employed for the inoculations is a pure cultivation of the comma-bacillus in broth, and the method of its preparation is most simple. Inoculation never gives rise to alarming or dangerous symptoms. He is convinced of the absolute truth of the published statistics, and holds that the problem of anticholera inoculation is solved, and that preventive inoculation must in future hold a pre-eminent place in the prophylaxis of cholera.

G. D'Arcy Adams, M.D.

THERAPEUTICS AND PHARMACOLOGY.

RECENT PAPERS.

5061. Israel, E.—On Antipyrin. (*Hospitals-Tidende*, Ser. 3, Band ii.; *Nord. Med. Arkiv*, Band xvii., Haft 2.)

5062. Wichmann.—Some Researches on Antipyrin in Typhoid Fever. (*Ugeskrift for Læger*, Ser. 4, Band x.; and *Nord. Med. Arkiv*, Band xvii.)

5063. Malthe.—On a Combination of Iodoform with Nitrate of Silver. (*Norsk Magaz. for Lægevidensk.*, Ser. 3, Band xiv.; and *Nord. Med. Arkiv*, Band xvii.)

5064. Muñoz. A. S.—Caffein. (*La Cronica Medica*, July, Aug., and Sept. 1885.)

5065. Villar and Florez.—Antisyphilitic Hypodermic Injections. (*La Cronica Med.*, Sept. 1885.)

5066. Kappeler.—Death from Chloroform. (*Berliner Klin. Wochensch.*, No. 45, 1885.)

5067. Vulpian.—On Salicylate of Lithia in Rheumatism.

5068. Laborde.—On Aceto-phenon.

5069. Desnos.—The Action of Baptisin, Sanguinarin, Juglandin, and Phytolaccin.

5070. Schultz.—Subcutaneous Injection of Bichloride of Mercury. (*Deutsche Med. Wochensch.*)

5071. Suyers.—Antipyrin in Typhoid Fever. (*Ann. de la Soc. Méd.-Chir. de Liège*)

5072. Magnan and Juranville.—Boldo-glucine as a Narcotic. (*Paris Médical*, Nov. 21, 1885.)

Art. 5061. *Israel on Antipyrin.*—Dr. Emil Israel, of Copenhagen, describes (*Hospitals-Tidende*, Series 3, Band ii.) the results of the use of antipyrin in thirty-nine cases in the Communal Hospital. Among the cases were 25 of typhoid fever, 7 of pulmonary phthisis, 4 of pneumonia, 1 of angina, 1 of pleurisy, and 1 of septicæmia (?) In typhoid fever, the reduction of temperature varied from 3·6 to 7·2 degrees Fahrenheit, and in one case reached 9·3 degrees. It began from half-an-hour to two hours after the administration of medicine, and the normal temperature was most frequently reached in three or four hours; but it often fell to 97°, and in one case to 95°. Sometimes such a tolerance of the drug was observed, that its action was diminished; in other cases, its action was constant. The remissions of the fever varied from ten to twenty-four hours, in some cases only from six to ten hours. Baths were generally unnecessary. The dose was 5 grammes (about 75 grains) daily, given in three doses, two of two grammes each, and one of one gramme; when the action of the medicine was prompt and powerful, the daily dose was reduced to 3 or 4 grammes; when necessary, it was increased to 6 grammes. To children, 2½ to 4 grammes were given in the day. In phthisis, it was difficult to estimate the value of the medicine, on account of the irregular form of the fever. In pneumonia, a daily dose of 4 grammes reduced the temperature considerably. With the fall of temperature, the tongue often became moist and the countenance brighter; the frequency of the pulse fell, while its tension was simultaneously increased. Antipyrin was excreted in the urine, and could be detected in it by perchloride of iron, which gave a deep brown-red colour; the reaction disappeared thirty-six hours after the last dose. Existing albuminuria was not increased under the use of antipyrin. Occasionally there were nausea and

vomiting; diarrhœa or tendency to intestinal discharge of blood was not increased. Profuse sweating was sometimes produced, but could be partially controlled by the simultaneous use of atropine; vomiting and nausea could be prevented by giving the antipyrin in enemata. In fifteen patients a rash was observed, resembling that of scarlatina. In one patient, a girl aged 11, suffering from pneumonia and nephritis, the administration of 4 grammes of antipyrin was followed by a fall of temperature, in a few hours, from 104°·9 to 93° Fahr.; profuse sweating broke out, she became cold, and sank into a state of coma. Wine was given, and warm bottles were applied, and she revived tolerably quickly; the next day the temperature rose to 98°·6 Fahr., and she soon was convalescent. In two cases, under the use of antipyrin, hæmatemesis and general convulsions were observed, but the causal connection was not apparent. One case was that of a man, aged 29, who had fever, jaundice, headache, and vomiting; he had taken 5½ grammes of antipyrin. In the other case, a boy aged 13, with typhoid fever, had taken 48 grammes of antipyrin in eleven days. Fourteen hours after the last dose the temperature again rose, and he had convulsions and hæmatemesis.

5062. *Wichmann on the Use of Antipyrin in Typhoid Fever.*—Dr. Wichmann (*Ugeskrift for Læger*) describes the results of the administration of antipyrin to nineteen patients with typhoid fever in the Communal Hospital at Copenhagen. Its action in reducing temperature appeared to be greatest with the first doses; afterwards, the fall of temperature was less marked. Collapse occurred in five cases; it was serious in two children 11 years old, but the patients recovered. Profuse sweating frequently occurred with the fall of temperature; nausea and vomiting were rather frequent. In three patients, a rise of temperature was attended with rigors. In four patients an exanthem was observed, most resembling that of measles; in one it was hæmorrhagic; it disappeared in spite of the continued use of antipyrin. Impairment of hearing and noises in the ears were not observed; the appetite was diminished. On the whole, Wichmann believes that the reduction of temperature produced by antipyrin is not attended with improvement in the general condition. The course of the disease appears unaffected by the use of this remedy.

5063. *Malthe on a Combination of Iodoform with Lunar Caustic.*—Dr. Malthe has used with benefit, in the surgical department of the Christiania Hospital, a combination of nitrate of silver with iodoform as a caustic and alterative in chronic torpid ulcers and fistulæ. The ulcer or fistula is first sprinkled with powdered iodoform, and then nitrate of silver is applied over the whole surface, and iodoform is again dusted over the part. This is followed by the production, with brisk effervescence, of nitrous acid, insoluble iodide, and chloride of silver, and perhaps, also, nitric acid and other combinations. These different stimulants act on the tissues in the nascent state. The process of decomposition may be represented by the following equation: $CHI_3 + 3(AgNO_3) = 3AgI + HNO_3 + 2NO_2 + CO_2$. A great advantage of the remedy is, that the cauterisation is strictly limited to the soft parts to which it is applied. Fistulæ and ulcers heal under an antiseptic layer of iodide of silver and iodoform, leaving strong cicatrices. The application has been used in the treatment of fistula following resection—*e.g.* of the hip-joint. A fæcal fistula following gangrene in hernia healed in a few days, after two applications, after various other remedies, including iodoform and Lister's dressing, combined with pressure, had been for some time tried unsuccessfully. It will probably also be found useful in cases of chancrous ulcer.

A. HENRY, M.D.

5064. *Muñoz on Caffein.*—In the July, August, and September numbers of *La Cronica Medica*, of Lima, there appears a careful and exhaustive review of the chemistry and the physiological and therapeutic effects of caffein. It is in diseases of the heart that caffein finds its chief therapeutic use, and more particularly in disease of the mitral valve; in lesions of the aortic orifice, caffein is absolutely contra-indicated, whether the effect of the lesion be obstruction or insufficiency, or both together. It sometimes happens, however, and this not unfrequently, that, in consequence of the dilatation of the left ventricle in the second or hypersystolic period, an insufficiency of the mitral valve is produced; in these cases, if the symptoms due to the mitral insufficiency predominate over those of the original lesion, then the treatment must be directed to relieve these, just as if no aortic mischief existed, and digitalis and caffein are indicated. It is, however, in diseases of the mitral valve that caffein is chiefly useful, and especially in the third or hypo-systolic period, while the compensatory hypertrophy of the second or hypersystolic period is failing. In these cases, it may be given alone, or perhaps still better in combination with digitalis, and it should be continued alone in the intervals during which it is necessary to suspend the administration of the digitalis. Caffein and especially, according to Gubler, guaranin, which is chemically identical, from their power of increasing the tension of the circulation, possess the property of provoking abundant diuresis. The diuresis is in relation with the amount of serum in the cellular tissue; when dropsy no longer exists, the diuretic effect is much less; in health, too, caffein causes only very slight diuresis. In the fourth or asystolic period, the heart has become a prey to granular fatty degeneration, and the so-called cardiac cachexia is established; to this period Gubler has also given the name of cardioplegia. Digitalis is now absolutely contra-indicated, but from caffein marked improvement may be obtained—'veritable resurrections,' according to Dujardin-Beaumetz. Professor M. Peter, in his clinical and practical *Treatise on Diseases of the Heart*, 1883, says: 'Digitalis is especially indicated with excessive frequency of the beats of the heart, its action being tumultuous and irregular; caffein especially with weak action and slow contractions.' Dr. Muñoz recommends that caffein should be given in solution; as a powder or pill it is very insoluble, requiring 75 parts of gastric juice to dissolve it, and pills may pass through the alimentary canal undissolved. The dose varies from 10 centigrammes to 2 grammes daily; the latter quantity is often necessary in heart cases to obtain the proper effect of the drug. He prefers to give it in aqueous solution, with benzoate, salicylate, or cinnamate of soda to increase its solubility. Caffein may also be often given with advantage hypodermically, when vomiting exists, or when it causes, as it often does, pain in the stomach, or in those very grave cases when death seems imminent, and a prompt and certain effect is wanted.

5065. *Villar and Florez on Antisyphilitic Hypodermic Injections.*—The authors maintain that the

hypodermic method in the treatment of syphilis has many advantages. It is more convenient than the method by inunction; the dosification of the remedy is more exact, and ptyalism is very uncommon. It is better than internal administration, as it does not give rise to gastro-intestinal disturbances; it shortens the duration of treatment, and very rarely produces salivation. Injections of bichloride of mercury are very painful, those of the biniodide even more so; injections of the albuminoid solution, which is difficult to prepare and unstable when made, have no superiority to those of the sublimate. Solutions of mercuric peptone keep longer than those of the albuminate, and do not cause local disturbance; the mercuric peptone has the same action over syphilis as the sublimate. The solution of cyanide of mercury is prepared easily; it does not coagulate albumen; injections usually do not cause pain or local accidents; it is especially useful in cerebral and ocular complications. Injections of mercuric peptone and of cyanide of mercury, then, are to be preferred, the latter especially in cases of ocular, cerebral, or medullary syphilis. Iodide of potassium may be given hypodermically; it is perfectly absorbed, as is proved by the characteristic reaction of iodine in the urine; but it should only be given hypodermically when it is not tolerated by the stomach. G. D'ARCY ADAMS, M.D.

5066. *Kappeler on Death from Chloroform.*—At a recent meeting of the Strasburg Scientific and Medical Association, Dr. Kappeler read a paper on death from chloroform inhalation (*Berliner Klin. Wochensch.*, No. 43). In the *post mortem* examination, no sign of decomposition of the body being present, there was found in the heart a walnut-sized bubble of nitrogen gas. Death had ensued after only a small quantity of chloroform had been inhaled, and the terminal symptoms had been preceded by vomiting movements and respiratory disturbances. Again, in the heart of a man, aged 60, who had been a heavy drinker, and who died unexpectedly while under chloroform, there was found a large quantity of gas which turned out to be nitrogen gas. In the hearts of fresh bodies after death from different causes there was found either no gas at all, or else, if decomposition had set in, a little carbonic acid gas. For some cases of death from chloroform, therefore, when the quantity given has been too small to cause paralysis of the heart or respiration, we may assume that nitrogen has been developed in the blood and has accumulated in the heart.

E. J. EDWARDES, M.D.

5067. *Vulpian on Salicylate of Lithia in Rheumatism.*—M. Vulpian has read, before the Académie de Médecine, a summary of the results of his experiments on salicylate of lithia in articular rheumatism. He states that his experiments indicate that lithia salts are not so poisonous as they are supposed to be. Salicylate of lithia is not more dangerous than salicylate of soda, and can be administered in almost equally strong doses. In acute articular rheumatism, salicylate of lithia relieves the pain which often remains in the joint after the swelling has disappeared, whereas colchicum and salicylate of soda have no effect. M. Vulpian believes that salicylate of lithia is especially beneficial in fibrous rheumatism. In progressive subacute rheumatism, M. Vulpian has seen salicylate of lithia produce great improvement. Salicylate of soda has been successful in such cases, and produced amelioration of the patient's condition; but both greater and more lasting benefit is obtained by salicylate of lithia. In chronic articular rheumatism M. Vulpian has found salicylate of soda useless, whereas salicylate of lithia has had a marked effect on the joints, which become less swollen than before the treatment. In order to obtain evident results, four grammes, sometimes four and a half or five grammes, must be given daily. Larger doses are followed by toxic symptoms. This drug sometimes induces headache and deafness, but is never followed by the distressing noises which characterise treatment by salicylate of soda. The headache and deafness disappear quickly.

5068. *Laborde on Aceto-phenon.*—M. Laborde has studied the action of aceto-phenon on patients when administered in relatively small doses. M. Dujardin-Beaumetz, in a recent communication to the Biological Society, stated that this substance produces sleep, accompanied by vertigo and cephalalgia. According to M. Laborde, a cubic centimètre injected under the skin of a guinea-pig produces a torpid comatose condition, from which the animal does not recover. A dose sufficient to produce sleep results in death; respiration is quickened and becomes irregular, the heart-beats are fewer in number, the animal starts convulsively, gradually grows colder, and dies. Aceto-phenon has quite a different effect on dogs; in hypodermic injection it is inert; if it be swallowed, vomiting follows; intravenous injections quickly produce sleep; a cubic centimètre thus administered throws the animal into an anæsthetic and analgesic condition; death ultimately ensues. At the necropsy, congested patches are observed, with infiltration of blood into the renal parenchyma, due probably to a general deterioration of the blood. In addition to these symptoms, there is a general lessening of the tension of the blood. Aceto-phenon, called by M. Dujardin-Beaumetz hypnon, always produces local irritation; the nerve nearest the area of injection loses its excitability and its sensibility; the muscle it innervates loses its contractility. It causes anæsthesia of the cornea when injected between the eyelids, but produces violent ophthalmia. If small doses of aceto-phenon be given before chloroform is given, it facilitates sleep. MM. Dubois and Bedaud have studied aceto-phenon at length, and also have observed that when administered previously to chloroform it induces sleep. A 4 per cent. chloroform mixture is sufficient, whereas, without aceto-phenon, one of 8, 10, or 12 per cent. is necessary. An hour afterwards, the animal wakes up, and a fresh injection of hypnon is necessary if it is to be sent asleep again.

5069. *Desnos on the Action of Baptisin, Sanguinarin, Juglandin, and Phytolaccin.*—A few years ago, the late Dr. Noel Gueneau de Mussy communicated to the Academy of Medicine Professor Rutherford's researches on different medicinal substances. M. Desnos has tested these experiments on four different bodies—baptisin, sanguinarin, juglandin, and phytolaccin. They are all resinous extracts from American plants. They are brown-red powders, very hygrometric, and have a saltish taste. M. Desnos used them in the form of pills of from 5 to 10 centigrammes. Baptisin was administered to fourteen patients, sanguinarin to four, juglandin to thirteen, and phytolaccin to seventeen. The patients did not remain in bed all day, in order not to encourage constipation. The general dose was 30 centigrammes (about 4·6 grains) daily, administered in two separate doses. If more were given, a third

dose was taken at eight o'clock at night. The patients generally had a stool the following day or night. In the case of patients habitually constipated, they gradually had regular motions. Baptisin, in doses of 30 centigrammes, was regular in its action, but frequently provoked colic. Sanguinarin, considered by Professor Rutherford as a never-failing cholagogue and purgative, was perfectly inert, though given in doses of 60 centigrammes. The action of juglandin, Dr. Desnos reports to be the same as that of baptisin. In two instances after it had been administered the stools contained blood; one of the patients was a convalescent after typhoid fever, and the other was rheumatic and dyspeptic. Phytolaccin, given in doses of 10 or 20 centigrammes, is regular in its action, and is not accompanied by colic.

5070. *Schultz on Subcutaneous Injections of Bichloride of Mercury.*—Schultz recommends for subcutaneous injection (*Deutsche Med. Wochensch.*, and *Centralbl. für Klin. Med.*, p. 548, 1885) 1 gramme of mercury bichloride dissolved in 100 cubic centimètres of hot distilled water. When this mixture becomes cold, 50 centigrammes of urea are added. This solution can be preserved for two or three months without deteriorating. The water used must be distilled and rendered perfectly pure, or the injection will give pain.

5071. *Suyers on Antipyrin.*—M. Suyers (*Ann. de la Soc. Méd.-Chir. de Liège*, p. 472) has administered antipyrin twenty times in typhoid fever. According to his experience it lowers the temperature without having any other special effect on the organism. Administered fifteen times for tuberculosis, in doses of 50 centigrammes, until from 2 to 5 grammes have been administered, the temperature fell below the normal. In acute articular rheumatism, Alexander (*Centralbl. für Klin. Med.*, 1884, No. 36), Tilmann (*Deutsche Medicinische Wochensch.*, No. 35), Pribram (*Prager Med. Woch.*, 1884), and Demuth (*Aertzliches Intelligenzblatt*, Dec. 9, 1884) believed that the local symptoms were moderated as well as the temperature lowered. M. Masius verified these experiments, and affirms that the antipyrin produces the same results as salicylate of soda. M. Suyers concludes that improvement in the condition of the patients is slow or rapid, according to the dose used. Antipyrin may, therefore, be considered as an antithermic agent, and one capable of modifying articular disturbance.

5072. *Magnan and Juranville on Boldo-glucine or the Glycoside of Boldo as a Narcotic.*—In the *Paris Médical*, Nov. 21, 1885, it is observed that much has been written on boldo, but no generally admitted conclusions have been forthcoming. The tincture of boldo was used, as well as the wine; when subsequently boldine, an alkaloid, was isolated by Verne and Bourguin. In 1884, M. Chapoteaut extracted from this plant another substance, which, when submitted to reagents, behaved as a glucoside. It was first tested on dogs, and afterwards on patients in M. Magnan's wards; doses of 2, 4, 6, and 8 grammes were given in draughts, capsules, or in rectal injections. Boldo is a powerful narcotic, without any attendant disagreeable results. A patient of M. Magnan, at Saint-Anne's Asylum, who suffered from hallucination and passed sleepless nights in a great state of distress and excitement, produced by imaginary tormentors, slept soundly when she took 2 grammes of boldo. This was discontinued during a period of ten days, and her old sufferings returned; she implored to have the capsules given to her again, and she then passed tranquil nights. Dr. Juranville, in a short memoir on boldo, describes ten similar cases. This substance is a hypnotic agent producing sleep, similar to natural sleep; there is an absence of anæsthesia; the respiration is normal; less carbonic acid is exhaled than when awake; the brain is also less congested than during waking hours. Administered to insane patients, boldo produces sleep in patients who had been long worried by insomnia. W. VIGNAL.

REVIEWS.

ARTICLE 5073.

Von Ziemssen's Handbook of General Therapeutics. Vol. II. Antipyretic Methods of Treatment, by Professor C. VON LIEBERMEISTER; Antiphlogistic Methods of Treatment, by Professor TH. JÜRGENSEN; and Epidermic, Endermic, and Hypodermic Administration of Medicines, by Professor A. EULENBERG. Translated by MATTHEW HAY, M.D., Professor of Medical Jurisprudence, University of Aberdeen. London: Smith, Elder, & Co. 1885.

THE volume before us will do much to elucidate what has been and still remains a puzzle in affections of which fever forms a salient feature. One of the great advances made in late years, has been the recognition of the fact that the fever *per se* may constitute a symptom of sufficient importance to justify our concentrating our attention on it for the time being to the exclusion of the others, and doing our utmost to reduce the fever, first by mechanical abstraction of heat (antithermic treatment), and, secondly, by remedies which tend to lower the temperature by diminishing the febrile process (true antipyresis). The latter has been attempted from time immemorial, and has the advantage of preventing the 'febrile waste' of the tissues; but it was reserved for modern observation and inference to venture on the antithermic treatment of patients suffering from fever, in a manner which would have ensured an uncompromising condemnation, not many years ago, to the medical practitioner bold enough to reduce his ideas to practice.

It must be recognised, then, that many of the ill effects of diseases characterised by fever are due to the fever itself, and that if we can, by the means at our disposal, check this rise and prevent it from attaining, or, at any rate, maintaining an abnormal and dangerous height, we thereby relieve the patient of an imminent peril, and place him in a condition to battle under more favourable circumstances with the remaining symptoms. It is symptomatic treatment in its best and truest application.

The means and manner of securing this object are dealt with thoroughly in the volume before us. Beginning with an interesting historical essay, the general subject of abstraction of heat is discussed from a scientific point of view, and the theoretical value of this method of treatment is accurately and clearly explained. Subsequently, the influence of particular drugs is scrutinised, and an attempt is made to give an approximative idea of their respective value as antipyretics. The author confines himself to discussing those already well known; but the translator supplements the deficiencies of the list by some remarks of his

own in the form of an appendix, bearing on drugs of quite modern introduction. It is curious that little importance appears to be attached to aconite, judging from the limited space devoted to its consideration.

Due weight is given to the influence of judicious dieting of fever-patients, and stress is laid upon the necessity of attacking the fever from several points at the same time, and of persisting in our attempts.

Antiphlogesis, which may be assumed to mean here antipyresis in a more limited sense, provokes an energetic condemnation by Professor Jürgensen of venesection, which he holds in horror, although he owns that it has never been part of his practice. A dreadful picture is drawn of the extent to which this practice was carried in years gone by, and an endeavour is made to show the unreasonableness of depletion as routine practice. Its physiological effects on the human body are exhaustively criticised, and copious tables are given of the results of experiments and observations on man and animals. The subject of transfusion, its indications and *modus operandi*, occupies nearly a hundred pages; and, although there is nothing particularly new either in the author's views or in his practice, yet much may be learned concerning the results to be hoped, and the dangers to be feared, from its employment.

Dr. Eulenberg contributes an essay on the hypodermic, epidermic, and endermic administration of drugs. All the chief drugs so employed are passed in review, and the translator has intercalated many excellent notes in reference to particular remedies; and he has moreover given the equivalent in English measure of their doses, thereby much facilitating their due appreciation by readers unfamiliar with the metric system.

Article 5074.

Von Ziemssen's Handbook of General Therapeutics. Vol. III. Respiratory Therapeutics. By Professor M. J. Oertel, M.D., of Munich, translated from the German, with a preface and notes by J. Burney Yeo., M.D., F.R.C.P., Professor of Clinical Therapeutics in King's College, &c. London: Smith, Elder, & Co. 1885.

The present volume is by far the most voluminous of the parts hitherto published of this work, and this may be taken to indicate, as the translator puts it, the great importance attached, in Germany and elsewhere, to this branch of therapeutics. Great strides have been made during the last twenty years by improvements in the necessary apparatus, and observations have been carefully made and recorded of the results obtained. The subject, it is true, still lacks precision both in its indications and its applications; but the field, if promising, is at the same time so vast, that much has been done by the mere enumeration and explanation of the appliances at our command, together with an epitome of our present knowledge. This is the object of the work before us, and its completeness leaves nothing to be desired. It is not difficult to conceive that in many—if not in the majority—of diseases of the respiratory tract, a much more satisfactory effect will be produced by direct application of remedies to the affected surfaces, if suitably administered, than by the circuitous route *viâ* the stomach; nor can it be thought desirable or necessary to act on the constitution in conditions where the fault may fairly be classed as local. Even when constitutional effects are those which we have in view, it is often preferable to administer medicines by way of inhalation. This is notably the case with chloroform, ether, &c.; and this method might doubtless be extended with advantage to many other drugs, which, as at present employed, put the stomach out of order, derange the digestion, and irritate the eliminatory organs. The arsenal of this branch of therapeutics is better stocked than most people imagine. Starting from the inhalations of steam, medicated or simple, which have been in vogue ever since the days of Hippocrates, we may employ vapours or fumes of substances, such as iodine, nitre, &c.; or we can dissolve these substances in water and administer them in the form of a spray, by means of one or other of the ingenious *pulvérisateurs* which modern invention has placed at our disposal, and of which an ample variety are illustrated and described in the volume before us. Again, if desired, we can cause substances to be inhaled in the form of an impalpable powder, which shall exercise its beneficent action directly on an irritated or diseased mucous membrane. The object of the inhalations may be, as we have said above, to procure constitutional effects; or, on the other hand, it may be directed to the production of some local change, stimulant or anodyne, astringent or demulcent, solvent, styptic, or antiseptic.

The second part of the work treats of the physical department of respiratory therapeutics. This is essentially of modern origin, although we moderns were not by any means the first to avail ourselves of the advantages of high or low atmospheric pressure. The ancients had a very fair conception of the good to be derived from a sojourn on the mountains or by the seashore, where, in addition to certain other qualities, we see a natural means of breathing an atmosphere under different conditions of pressure. What has been done of late in this direction, has been to reproduce these conditions under circumstances which permit a systematic investigation of their effects and a careful scrutiny of each of the different factors involved, with a view of determining what therapeutic effects each or any of them may be expected to yield.

The author has done his best, and the translator has ably seconded his efforts, to put us in possession of sufficient data to enable us to carry on the inquiry ourselves; and it would be difficult to find a more promising field for energetic, painstaking, and scientific observation. The book is clearly printed, and copiously illustrated with plans of the various apparatus, while there is no lack of sphygmographic tracings to show the effect of the 'pneumatic' treatment of the circulation, &c.

Article 5075.

A Physician's Pharmacopœia. By J. Baily, Pharmacist, Margate. London: J. & A. Churchill. 1885.

This small pocket companion, of about 100 pages, contains formulæ of various unofficial preparations; and the author gives as the reason for its compilation the laudable object of 'securing uniformity in dispensing, and to discourage secret nostrums,' which object appears to some extent to have been attained.

The book furnishes data and suggestions as to the best and most reliable combinations of various drugs and chemicals, and gives some novel and valuable technical details pertaining to the domain of practical pharmacy, which may enable the physician to

prescribe certain nauseous and irritant drugs in an agreeable and palatable form without sacrifice of their efficiency. Amongst the prescriptions which it contains will be found the following: acidum carbolicum odoriferum, anticatarrh smelling salts, chilblain specific, chlorodyne (two kinds), emulsio olei morrhuæ (with various compounds), enema nutritivum, essences, extracts, gelatines, glycerines, and glycerols, gossypia, insufflations, and liquors; mixtures of various agents, difficult of administration in such form, as caffein, carbolic acid, chlorine, cinchona and iron, and phosphorus; oleates, powders, pills, styptic colloid, and tinctures, including Warburg's fever tincture, tincture of lily of the valley, tasteless tincture of iron, and tinctura iodi decolorata. The formulæ for lozenges are a particular feature of the book, full directions being given for the prescription of nearly sixty different preparations in this special manner. Formulæ for ointments, vapors, and vinum carnis cum ferro et cinchonâ, and a copious index and dose-table, bring this useful little compilation to a close. It is likely to find a place in the consulting-room and coat-pocket of the consultant and busy practitioner, to both of whom it may be expected to furnish many serviceable hints in the prosecution of their daily work.

ARTICLE 5076.

A Handbook of Therapeutics. By SYDNEY RINGER, M.D., Professor of the Principles and Practice of Medicine in University College, &c. Eleventh edition. London: Lewis. 1886.

THE eleventh edition of this deservedly popular text-book of therapeutics has now appeared, with additions to bring it up to date. The work is too well known to call for any remarks on its general plan, which is clear and comprehensive. The valuable chapters at the beginning of the book on the tongue, the pulse, &c., as aids to clinical observation, have not been interfered with, and will doubtless be as highly appreciated as heretofore. The information contained in them deals with details which, essential—nay, indispensable—though they be, are rarely treated as a whole, or in a way to enable the student to at once fix his attention at the bedside on the salient points before him; and whatever he subsequently learns of the subject is picked up casually during the first few years of his professional career.

The drugs of modern introduction which have secured for themselves a position in the arsenal of therapeutics are thoroughly discussed, and full notes of their physiological action are given. Dr. Ringer excels in this particular department; and, although the physiological action of drugs is not always, or even often, an indication of their therapeutical use, yet this knowledge is evidently useful and necessary to the student and scientific practitioner, and it is, moreover, a salient feature in examinations. In this category come gelsemium sempervirens, which possesses marked influence over certain forms of neuralgia; jaborandi, the alkaloid of which, pilocarpin, has a striking power over the secretion of sweat; and others classed as less important, such as convallaria majalis, muscarin, &c. The author deals rather briefly with cascara sagrada, antipyrin, and one or two others whose merits, if not absolutely established, are at any rate sufficiently remarkable to deserve more than a passing notice. There are, too, a few omissions. We are unable to find any mention, for example, of the jequirity bean, although it is by this time a stock drug in all ophthalmic hospitals; and the same remarks apply to homatropin. The physiological action of nitrite of amyl is carefully recorded, but no mention is made of its now recognised efficacy in cases of chloroform-poisoning. In the few lines devoted to nitrite of sodium, no allusion is made to Dr. Murrell's valuable investigations, and the information concerning this drug is meagre in the extreme. The article on iodoform is calculated to frighten any practitioner nervously disposed, and to discredit a drug which is daily becoming more widely used. The dose of the alkaloid hyoscyamia is put at from $\frac{1}{8}$th to $\frac{1}{4}$th grain, but, in furnishing this dosage, it would be well to caution the reader of the extremely uncertain and varying strength of the commercial article. With certain preparations which we have seen, one-sixth of a grain would have produced serious symptoms.

There is a short chapter, containing an ingenious generalisation of the topical action of acids and alkalies on secretion. Some valuable rules are given for the employment of alcohol, which may aid the conscientious student or practitioner to relinquish the routine use of stimulants, a habit which in many cases is attributable to an ignorance of what constitutes a contra-indication.

Dr. Buxton has revised the chapter on nitrous oxide gas, which is now very full, and he has contributed the articles on ether and cucaine, of the former of which his long experience as an anæsthetist enables him to speak with authority.

The book concludes with a liberal supply of directions for preparing food for the sick, and a copious index to diseases, both of which will be found invaluable for reference. Dr. Ringer pays a graceful tribute of thanks to Dr. George Bird for the great and valuable assistance which he has received from him throughout the work.

ARTICLE 5077.

Lehrbuch der Chirurgischen Krankheiten des Ohres. Von PROFESSOR HERMANN SCHWARTZE.

Text-book of the Surgical Diseases of the Ear. By PROFESSOR HERMANN SCHWARTZE. Stuttgart: Ferdinand Enke. 1885.

PROFESSOR SCHWARTZE, of Halle, the well-known editor of the *Archiv für Ohrenheilkunde*, has written a work on diseases of the ear. It may not be as detailed, or such easy reading as that of Professor Politzer, but in many parts it has strong and original characteristics of its own. A few of these we may point out here.

The author maintains unabated his confidence in the caustic treatment of chronic suppuration in the middle ear, which he introduced to the profession in 1868. The action is, he says, prompt and reliable in suitable cases—*i.e.* when the mucous membrane is hyperæmic, swollen, and succulent, but without granulations or caries. The method, of which full details are given, is simply to introduce a lukewarm solution of nitrate of silver (1:30 to 1:10) into the meatus, forcing it along the Eustachian tube by means of pressure on the tragus. Neutralisation, by means of a strong solution of common salt used in a similar manner, is never to be omitted. After thousands of applications of this method, the author assures his readers that he has never seen any drawbacks from its use.

In Chapter XI., on 'Excision of the Tympanic

Membrane and Ossicles,' the author enters upon ground which will be novel to many readers. The method he adopts is to divide the membrana tympani close to its periphery, removing at the back part also the 'tendinous ring' (according to Kessel's recommendation) in order to prevent a regeneration of the tissue at that part. The tendon of the tensor tympani and the joint between the stapes and incus are then divided. The membrane, which is now movable, is removed, together with the malleus and incus, by placing a Wilde's snare round the manubrium. Roughly speaking, the author recommends the operation in cases of caries of the malleus and in instances of fixation of that bone, the stapes still remaining movable, as tested by a preliminary perforation of the membrane and other means. Short particulars of six cases are given, from which it appears that the results of the operation are not brilliant in regard to the improvement in hearing power, but they show clearly its feasibility and the effect it has in improving the tinnitus in some cases. The author speaks favourably of it in caries of the malleus, as a means of arresting the intractable suppuration. Further particulars of the method of operation and of the indications for the same must be read in the original.

On p. 309 the author states his experience that the treatment of acute purulent otitis media by means of powders (iodoform, boracic acid, alum, &c.), is very likely to give rise to secondary mastoid periostitis by favouring the retention of pus.

As might be expected, considerable space, altogether twenty-six pages, is devoted to perforation of the mastoid process, a subject on which the author's experience is large. He keeps to his method of operating by means of hollow chisels, 2 to 8 millimètres wide. We find him drawing special attention to the fact that caries may exist in the mastoid process for years, although the skin over it may be perfectly normal, and that small carious openings may exist in the cortex with a perfectly unaltered tegumentary covering, and without its being possible to ascertain their presence by palpation with the finger.

The book has the advantage of an index, and a copious reference to authorities at the commencement. It is a work which should be read by every otologist. E. CRESSWELL BABER, M.B.

ARTICLE 5078.

On Tubercle and Tuberculosis. Part I. By Professor P. BAUMGARTEN. Pp. 125, with 7 plates. Berlin: Hirschwald.

THIS pamphlet, a reprint from the *Zeitschrift für Klin. Med.*, Band ix. and x., comprises the histogenesis of tubercle. The author begins with a short sketch of the progress of our knowledge of tubercle. Cohnheim in 1882 said:—'We know nothing as regards the most important point of all—*i.e.* the origin of the cellular elements of these new growths, such as tuberculous, leprous, syphilitic, &c. None of the hypotheses founded on the histological characters have been verified—*e.g.* these cellular elements have not been proved to originate from the endothelium of lymph-vessels, nor from the cells of the vascular adventitia, nor from connective-tissue cells, whether fixed or migratory. There is, moreover, no actual proof of their origin from colourless blood-corpuscles, though the above-mentioned neoplasms are so nearly related to inflammatory granulation-growths as to make this assumption very plausible. It has yet to be decided whether tuberculous growths are to be classed amongst the infective inflammations or the infective hypertropies, or whether there is an intermediate stage.' Again, Arnold (see Virchow's *Archiv*, Band lxxxii.–lxxxiii. and lxxxvii.–lxxxviii.) made an advance in proving in tubercles of the kidneys and lungs a nuclear division of the enclosed epithelial elements, which clearly represented a process of proliferation of the preformed elements of the tissues, and a share of these in the formation of epithelioid and giant-cells. But how the latter arise in interstitial connective tissue, where no preformed elements exist, is left uncertain. Arnold presumed their origin from lymphoid cells, but by progressive—not regressive—metamorphosis, in opposition to Ziegler. These lymphoid cells Arnold allied, as Virchow does, more closely to fixed connective-tissue cells than, as most authors do, to migratory blood-cells. Examinations of organs after death not affording a solution of this problem, recourse was had to experiment.

It was long known that the presence of foreign bodies in the tissues could cause the formation of miliary nodules, and for a time this was thought to upset the results of Villemin's inoculations with human tubercle. But such miliary nodules differed from this, both histologically in not exhibiting giant-cells, and pathologically in not having an infective character, and especially in not undergoing caseous metamorphosis—the true criterion, apart from the tubercular bacilli, of human tubercle.

Then came Koch's discovery of the tubercle-bacillus, also independently discovered by the author, who claims, moreover, to have recognised its specificity and importance (see *Centralbl. für die Med. Wiss.*, 1882, No. 15, and *Ueber Tuberculose, Deutsche Med. Woch.*, 1882, No. 22). The *Centralblatt*, No. 22, 1884, contains the author's method of producing pure cultures of the bacillus by successive inoculations of different rabbits with tuberculous matter. The original piece of tubercle is left in the anterior aqueous chamber for one week, where it enlarges without inflammation. From this a second rabbit is inoculated, and so on, thus substituting elaborate culture-apparatus by living tissue. The author had early said of the bacilli, 'without (these) tubercle-bacteria no tuberculosis,' and conversely. And, further, he alleges that he has definitely shown that the tubercle caused by Koch's inoculations underwent caseous changes and, consequently, was really true human tubercle, the importance of which point Koch himself appears to have somewhat underrated. It is most highly probable, however, that Koch's brilliant experiments did stimulate the author to renewed researches.

The main object of this pamphlet is to prove the share which the finer cells of the tissues take in the formation of tubercle, in opposition to the very prevalent view that wandering leucocytes play here the chief part. Koch, in his well-known paper (*Mitth. aus dem. Kais. Ges.-Amt.*) states that the tubercle-bacilli invading the body are conveyed to the various sites by migratory leucocytes, and thinks it extremely probable that these cells, laden with bacilli, when they come to a standstill, are changed into the epithelioid and giant-cells of tubercle; but leaves it open to supposition whether or not the fixed cellular elements of the past may take up the bacilli, and may then have an epithelioid character. All this is stoutly opposed by Baumgarten, on the

strength of numerous detailed inoculation-experiments. He declares that the bacilli are free in the tissues, and are only exceptionally enclosed in migratory cells, and then only when vascular changes have been caused. A tubercle is thus not a mass of leucocytes, neither do these ever change to epithelioid and giant-cells. These latter are derived solely from the fixed cellular elements of the tissues; moreover, they do not originate in the union together of epithelioid cells, but from nuclear prolification of such cells separately, each remaining single. The process is a restrictive one, and accordingly giant-cells are found chiefly in chronic localised tubercle, when only few bacilli are present.

But the author extends his conclusions, which agree with those of Virchow and Cohnheim, of Cornil and Ranvier, and others, over the whole domain of granulation-tissues, and asserts that all such tissues find their starting-point in the karyo-kinetic division of the fixed cellular elements of the tissues—*i.e.* the epithelioid elements of such growths represent derivatives from the previous epithelioid layer of the blood and lymph-vessels at the point of inflammation, the fixed connective-tissue cells of vascular canals, or the investing or glandular epithelium—and not as Ziegler and most modern pathologists assert, from escaped colourless corpuscles. The latter do escape, it is true; in fact, there is a typical inflammatory exudation of them from the vessels enclosed in the affected spot, but this is a secondary process, by which the *primary epithelial-celled* tubercle is converted into the secondary lymphoid-celled tubercle, a change which occurs the more quickly as the bacilli are more numerous. If once the lymphoid-celled tubercle be produced, it is incapable of further development; its only destiny is destruction by caseous metamorphosis, beginning with nuclear necrobiosis, and ending in the formation of a cheesy detritus. The author's experiments were chiefly made on the eyes of living albino rabbits, as well as other organs, and the reader is referred to the original for further details which are of absorbing interest. The illustrations are creditable to the work.

E. J. EDWARDES, M.D.

ARTICLE 5079.

The Surgical Diseases of Children. By EDMUND OWEN, M.B., F.R.C.S. Cassell & Co. 1885.

THIS is one of Cassell's clinical manuals for practitioners and students in medicine; and we look with considerable interest at the work, coming, as it does, from the hands of a surgeon of special experience in this subject, and recognised as an able teacher as well as a peculiarly practical surgeon.

The limited size of these manuals necessarily restricts the author, and yet the subject is treated thoroughly, and the views expressed are the result of his own experience rather than a compendium of the experience of others. It is in no sense a compilation, but a series of essays on the various diseases of childhood which come under the surgeon's notice. And the language is forcible enough and clear enough to make the book both attractive and useful. It certainly may be looked to as the type of a practical manual, and will strengthen the reputation of the author and be a credit to the enterprise of the publishers. In the preface 'claim is not made that this volume be considered an exhaustive treatise' its design is that of a 'complete monograph; in a series of clinical manuals for practitioners and students.' The larger works of Holmes, Cooper Forster, West, and others are recognised as the standard works of reference; and the author treats his subjects shortly but vigorously, and with great success. The arrangement of the type also adds materially to the clearness of the book for reference, and the woodcuts are good, though simple. The four coloured lithographic plates are useful and good representations of extreme rickets, strumous dactylitis and ulcerative stomatitis, condylomata and ectopia vesicæ, and myeloid tumour of the jaw and molluscum contagiosum.

Looking now at the real work of the author more critically, we find a chapter of introductory remarks, which are short but eminently practical. The few words on how to examine children and gain their confidence should be read by every student, and might be followed more carefully by other practitioners very often. We fancy the author might be even clearer than he is in insisting upon the surgeon not on any pretext telling a patient a lie. Children are very sharp, and once deceived will not easily recover their trust. We feel strongly that it is wrong and shortsighted to tell an untruth to a patient who can understand, whether the patient be a child or even an insane person. The introductory remarks include a reference to temperature; and here we find a practical warning against being alarmed by a sudden rise as shown by the thermometer, and a statement that it is the steady rise of temperature which forebodes ill. But we think that some reference might with advantage be made here to the normal range of temperature in a child. The value of the pulse, precautions to be taken before operation, anæsthetics, medicines, leeches and poultices, are discussed, and then follow a couple of pages of useful advice upon how to bring up infants.

After the introductory remarks, follow chapters on special subjects; and each chapter forms a short but practical essay of about a dozen pages on the subject chosen. Beginning with croup, diphtheria, and laryngitis, the author takes into consideration the many things which such a work involves, and gives most space to the consideration of croup and its allies, to surgical diseases of the mouth, pharynx, and ear, to the genito-urinary tract, the spine, fractures, hip-joint disease, knee-joint disease, and to deformities of the foot. It is beyond the scope of a short review to examine these chapters very critically; but we rise from a perusal of the work, satisfied that we have before us a sound guide for students and practitioners, and we do not find that anything of importance has been omitted. Moreover, what is said is said in language that cannot be mistaken. We are glad to find a clear condemnation of the dangerous and generally futile plan of sucking the tracheal tube or tracheal wound for the dislodgment of diphtheritic membrane. This has been treated too lightly by some authors of reputation.

In the treatment of the various surgical affections, the author is careful to indicate the principle requisite to be borne in mind, and does not deal so much with the special splint or apparatus, or material used, as with the objects which have to be gained. It is such indications that the student or practitioner requires to lead him to reasonable treatment; and the details of what the author has found best after a large experience are valuable as bearing out the principles he lays down. A surgeon should be a practical mechanist, and it is a pity that more attention is not given to practical mechanics

at schools generally, and especially when it is known that a boy is intended for the medical profession.

The remarks upon the pathology of certain affections are short and clear, and an useful paragraph on prognosis is inserted in most of the subjects treated. The work will probably find a large field of usefulness, and will form a reliable guide and a very attractive companion. The author may be heartily congratulated upon the appearance of the manual.

W. W. WAGSTAFFE.

ARTICLE 5080.

Pathological Mycology. An Inquiry into the Etiology of Infective Diseases. By G. SIMS WOODHEAD, M.D., F.R.C.P.Ed., Assistant to the Professor of Pathology, and ARTHUR W. HARE, M.B., C.M., Assistant to the Professor of Surgery in the University of Edinburgh. Section I.—*Methods.* With Sixty Illustrations. Edinburgh: Young J Pentland. 1885.

THE strong point in this volume is the illustrations which are undoubtedly of great though unequal merit. The coloured drawings of the micro-organisms, as they are seen in stained specimens of secretions or organs are, as a rule, very good and true; so are the brilliantly coloured drawings of micro-organisms growing on potatoes, and on bread-paste in flasks. More qualified praise must, however, be given to those intended to illustrate the appearances presented by various organisms as growing in test-tubes; some are good, while others are indifferent. The apparatus used in research is figured and well described (as are also the methods of staining micro-organisms in tissues and secretions). For the rest, it will suffice to say that directions are carefully given for making and sterilising suitable media for cultivation, such as bread-paste, various fluids, meat-gelatine, and meat agar-agar, and blood-serum, for charging the vessels and for inoculating, as well as for obtaining material for inoculations. The specific peculiarities of some of the commoner micro-organisms are somewhat shortly given in an appendix, and a second appendix contains a bibliography which will be of assistance to workers who desire to go to the original authorities.

ARTICLE 5081.

Manuel de Technique des Autopsies. Par BOURNEVILLE et P. BRICON. Paris. 1885.

THIS is a clearly printed, compact little volume, about the size of a pocket-book, intended as a text-book for those who are called upon to make autopsies. It measures 5½ by 4 inches only, and weighs 5¼ ounces. But, like most French books, its value is greatly diminished by the slipshod manner in which it is, we will not say bound, but put together. Otherwise, it would be just the book for the medical practitioner who is only occasionally called upon to operate, to put into his pocket on the way to a *post mortem* examination.

About two-thirds of the book is devoted to the details of necropsies. The directions for making these are, as a rule, excellent. We may more especially point out those relating to the examination of the brain. This chapter is illustrated by clear, though somewhat diagrammatic, engravings, mostly borrowed from Charcot's *Leçons sur les Localisations.* No attempt is made to make the book a treatise upon pathological anatomy. Nearly one-half the bulk of this small volume might with advantage be dispensed with. Statistical and bibliographical details as to the time at which *post mortem* examinations are begun in various countries, and urgent demands that every other consideration should give way to the imperative needs of science, for early necropsies, are here out of place. The authors quote with no disapprobation the (as it is stated) practice at Buda-Pesth of commencing necropsies about half an hour after death.

This preliminary section, however, of the book is, though misplaced, of great interest, and might well form an introduction to some larger treatise on pathological anatomy. It is full of valuable information. But, like most French writers, the authors entirely ignore what is done in England. The practice of this country is not once referred to; whilst the practice of such minor places as Bucharest and Hayti is repeatedly quoted.

Another great defect is, that medico-legal *post mortem* examinations are entirely, and purposely, ignored; and it is in the making of these that the general practitioner most needs the assistance of a handy manual. Yet, in spite of these defects, this manual is one which is well worthy of perusal, and to be placed on the shelves of every medical man's library.

Hospital authorities and municipal officers will find full descriptions of the needs of the dead house, with plans, elevations, and details as to *personnel* and instruments required.

THOS. STEVENSON, M.D.

ARTICLE 5082.

Cancer. A Study of Three Hundred and Ninety-seven Cases of Cancer of the Female Breast. With Clinical Observations. By WILLARD PARKER, M.D. New York and London: G. P. Putnam's Sons.

THIS book is a valuable record of conscientious clinical labour, undertaken by the late Dr. Willard Parker. The author fell ill and died before the preparation of the work itself could be completed; but the task was finished by his son. Dr. Parker considered that the formation of cancer-cells was essentially a process of perverted assimilation in the tissues of the diseased part, and was strongly in favour of the local origin and non-hereditary character of the disease. His own statistical evidence led him to believe that the great effective causes of cancer were luxurious living, prolonged local irritation of an epithelial surface, mental affliction, and lastly, dysmenorrhœa and other uterine irregularities. The second of these four alleged causes has long been recognised, and alone may be said to have been advanced beyond the limits of theory. A badly made corset is no doubt the guilty agent in some cases of scirrhus of the breast; nor must it be forgotten that fibres of cotton-wool or of other fabrics rubbing against the open ducts at the apex of the nipple are sources of dangerous irritation. Dr. Parker held, with respect to luxurious living, that excess in animal food increased the waste products of the body, and that, if coupled with insufficient exercise, the waste products were retained in the system and had a tendency to produce abnormal growths. The two other supposed causes of cancer are based upon far more hypothetical grounds. The author's classification of the

different varieties of cancer of the breast is clinical rather than pathological; but it must be remembered that Dr. Parker could not have spoken of cases under his treatment forty years ago, in the terms of contemporary pathology.

Dr. Parker's observations are of interest and deserve respectful consideration for evident reasons; nevertheless, his statistical tables are of far higher value. They were collected and prepared by a surgeon who was competent to undertake such a task, so that they will be valued and trusted by all future workers who may desire to study subjects connected with malignant disease, however they may disagree with the author's theories. The headings of the tables are Date—Number of Cases—Civil Condition—Number of Children—Breast involved—Family History—Manifestation of Disease before or after Menopause—Age at Commencement—Age at Operation or Observation—Number of Operations—Duration of Disease—Lived after Operation—Variety of Cancer—Physical Condition—Assigned Exciting Cause—General Remarks. The dates range from 1830 to 1881; so that few, if any, statistical tables have ever been founded upon so long a personal experience on the part of their compiler. ALBAN DORAN.

ARTICLE 5083.

Ueber den Shock. Eine kritische Studie auf physiologischer Grundlage. Von Dr. G. H. GROENINGEN, Staatsarzt am königl. med.-chir. Friedrich-Wilhelms-Institut in Berlin. Mit einem Vorwort von Dr. A. BARDELEBEN. Wiesbaden: Bergmann.

DR. GROENINGEN attributes shock to exhaustion of the medulla oblongata and spinal cord, due to a great violence inflicted upon the nervous system, and rejects all other theories. He believes that reaction by no means necessarily or invariably succeeds shock, and that it is not a result of shock, but that both are due directly to the injury. As for the fever of reaction, described by some authors, he considers that it is true traumatic fever, and quite independent of reaction. Shock appears to be invariably associated with many influences besides the direct injury during an accident or operation, such as alcoholism, fear, imperfect administration of anæsthetics, clumsy bandaging, cold rooms, cold beds, and transport too soon after operation. The author insists on the purely symptomatic character of shock, and on its negative *post mortem* appearances. *Ueber den Shock* is a valuable work of reference; every question relating to its subject is carefully discussed, and the collective experience of other writers is fully displayed and duly respected.

ALBAN DORAN.

ARTICLE 5084.

Notes on Inorganic Materia Medica and its Chemistry. By J. SCHÜTZ SHARMAN. London: Effingham Wilson. 1885.

IN this little book of fifty pages, an endeavour has been made to explain the elementary chemistry connected with the inorganic portion of the Materia Medica. Much stress is laid upon the formulæ and the quantivalence of the elements. As the author himself states, the matter of the Materia Medica has been based upon the standard works of Brunton, Garrod, and the *British Pharmacopœia*; and that of the chemistry, upon Attfield and Roscoe. In so far the book fulfils its purpose admirably; and, as it can be easily carried about in the student's pocket, it might thus be made very useful to him in his early efforts to make himself acquainted with the elementary details of this far from agreeable subject, at least at its outset. If he were provided with a similar small handbook of the elements of organic Materia Medica, drawn out on the same lines, the student who is working in a druggist's establishment, or, better still, in a hospital dispensary and Materia Medica museum—and, without a practical training of some such kind, it may as well be said Materia Medica cannot be properly learnt—will, with some application, be very well furnished and prepared for the laying down of a sound and solid foundation, upon which, with advantage, he can afterwards safely build, by means of such an admirable and scholarly text-book as Brunton's *Pharmacology, Therapeutics, and Materia Medica.*

T. CRANSTOUN CHARLES, M.D.

NEW PREPARATIONS.

ARTICLE 5085.

MESSRS. BRAND & CO.'S NEW PEPTONISED MEATS.

MESSRS. BRAND & Co., of Little Stanhope Street, Mayfair, who have for some time past been engaged in a series of experiments connecting with the peptonising of meat foods, have recently made public their results by introducing their beef, veal, mutton, and chicken peptones, which are of very superior quality. The samples submitted to the writer have a fine tonic bitter flavour, and as delicate preparations of the nutritive and pre-digested principles of the different meats mentioned can scarcely be excelled. The many years Messrs. Brand & Co. have been before the public as makers of special foods for invalids, and the practical knowledge acquired by them during that period, have no doubt been of material aid to them in perfecting these elegant dietetic preparations, which are well worth the notice of the profession.

ARTICLE 5086.

MESSRS. PARKE, DAVIS, & CO.'S PREPARATIONS.

IN a notice of Messrs. Parke, Davis, & Co.'s preparations, published in the LONDON MEDICAL RECORD of Nov. 16, we say:—'Messrs. Parke, Davis, & Co. have quite recently called attention to several improved forms of administering medicines, especially rare alkaloids and glucosides. Their gramme tubes or vials of colchicine, convallamarine, daturine, hydrastine, napelline, muscarine, picrotoxine, and veratrine are well worthy of attention.'

We have since received a communication from this firm stating that they do not prepare these gramme tubes of colchicine, &c.

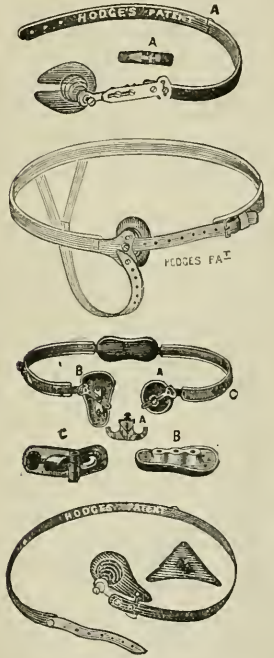
M. CORLIEU, librarian at the Paris Medical Faculty, has just published a volume containing a collected series of his articles which had previously appeared in a medical journal. The volume is entitled *Les Médecins Grecs depuis la mort de Galien jusqu' à la chute de l'Empire d'Orient.*

NEW INVENTIONS.

ARTICLE 5087.

HODGE & CO.'S NEW TRUSS.

THE spring of this new contrivance is disjointed in the middle, to allow any desired degree of expansion, according to the breadth of the patient's hip; but the joint is so constructed as to be readily adjusted and firmly fixed, without impairing the elasticity of the whole spring. The pad is a rubber disc convex on the surface to be applied over the site of the protrusion, which is thereby subjected to gentle steady pressure, without any risk of the hernial opening becoming dilated, as may occur



when a conical pad is employed. The pad is perforated for purposes of ventilation; its back is concave, bearing in its centre a prominent stem or pedicle. A short piece of steel is fitted, by a screw at each end, into this stem and into the extremity of the spring of the truss, so that the pad can be adjusted at any angle to the spring. At the hinder extremity of the spring is a wide soft leather pad. This truss is of ingenious construction, light and strong. We understand that it has given great satisfaction to several surgeons, who have recommended it, and to numerous patients by whom it has been worn. The maker is Mr. Hodge, truss and surgical appliance manufacturer, 18 James Street, Oxford Street.

ARTICLE 5088.

A NEW STAMP DAMPER.

WE have received a very neat little invention for affixing stamps to letters, thus obviating the unpleasant necessity of using the tongue for damping the postage stamp. The little arrangement is made in polished brass, so as to be as ornamental as it is useful, and is to be had at a very moderate price from the Herald's Office, Perth. The neatness and efficiency of this useful little addition to the writing table are doubtless due to the fact that it is the invention of a well-known medical practitioner in Perth, who has realised the inconveniences of the somewhat primitive plan generally adopted in affixing stamps to letters, &c.

ARTICLE 5089.

THE PALLAS SYRINGE.

THIS is an ingenious and effective form of vaginal syringe for irrigating the vagina or rectum. It is filled by unscrewing the bulb containing the fluid to be injected. It is so constructed that, when the tube is in the vagina or rectum, if the syringe is pressed against the external parts, the fluid may be sucked back into the bulb, thus enabling the patient to thoroughly irrigate the vagina with one injection. It is a useful instrument and will be a formidable rival to the ordinary vaginal douche.

ARTICLE 5090.

BOUDET'S GALVANO-THERMIC EXCITOR.

THE galvano-thermic excitor invented by M. Boudet, of Paris (*excitateur galvano-thermique*), consists of two concentric discs charged with positive and negative electricity. It produces a local effect, and the disposition of the poles renders diffusion of the current impossible. If, as in a case of intestinal occlusion, it be necessary to diffuse the current, a hollow mandril, charged with negative electricity, is placed in a sound which is passed into the intestine *per rectum*; the saline solution, which passes through the mandril, is charged with the same electricity and communicates it whenever it is in contact with the mucous membrane; the positive pole is applied to the dorsal or the abdominal region. The same disposition is maintained for the bladder, but the mandril is replaced by a thin metallic thread.

ARTICLE 5091.

A NEW THERMOMETER.

A THERMOMETER has been made in Dr. Gassler's workshops at Bonn, which can be tested by the person who makes use of it. The lower part of this instrument is graduated from 2° to +2° C., divided in tenths of degrees; this graduation is separated from the upper graduation by an S-shaped curve, which prevents the indicator from entering the reservoir. In order to ascertain if the thermometer be correct, it is necessary to plunge the reservoir into a glass containing broken-up ice, and then carefully note where the mercury stops; the necessary correction is easily measured. This thermometer can be used to control other instruments of the same kind.

M. SOCQUET'S statistical work on suicide and crime in France has been honourably mentioned by the Académie des Sciences.

MISCELLANY.

NEW OTOSCOPE.—M. Gellé has presented to the Biological Society of Paris a new form of otoscope invented by him. It consists of an India-rubber tube, 30 or 40 centimètres long, instead of fifty; to which is fitted a glass tube 10 or 12 centimètres long. This instrument isolates the auscultator from contact with external noises.

DR. NORMAND, in a communication to the Académie des Sciences, states that the mucus of dysentery always contains a specific microbe, which has been observed by others, but has not hitherto been considered to be an important agent in the etiology of dysentery.

AT a recent meeting of the Medical Society at Vienna, Dr. Kaposi showed a little girl attacked by pigmentary xeroderma, a very rare disease, which he described for the first time in 1870. It is observed in children of one year old, and at the beginning of the second year.

M. LOEWENBERG, of Paris, treats suppuration of the mastoid apophyses by facilitating the escape of pus, either by puncturing the tympanum, or by increasing the existing perforation by using the galvano-cautery. He insists on rigid antiseptic treatment being observed, and forbids trepanation unless a sequestrum exists, and all other means have failed.

POISONOUS MUSHROOMS.—A family named Albernac, of the Commune of Hostens, in the Gironde, have been poisoned by mushrooms. A passing postman told the neighbours he had heard wailings of distress, and on seeking the reason they found the father writhing in intense agony, the mother and daughter dead. The father succumbed shortly after.

AT a recent meeting of the Académie des Sciences, M. de Lacaze Duthiers mentioned some researches by M. Herman Fol on hydrophobia. This observer has isolated a microbe which he believes to be specific to hydrophobia. Inoculation with this microbe in the orbit produces hydrophobia, and the inoculation period is shorter than with M. Pasteur's method.

INTRACRANIAL TUMOURS.—A discussion will be opened at the Pathological Society of London, at the first meeting in February 1886, on intracranial tumours (including cysts and gummata), with especial relation to their nature, situation, size, probable duration, the age at which they occur, the number of tumours present in the brain, the presence and situation of secondary tumours. It is desired that the discussion may be illustrated by as many specimens as possible, and by pictures and diagrams.

HERR OPPLER has by experiments ascertained that roasted coffee acts on iodoform as an active deodoriser. As roasted coffee is a powerful disinfectant, it has, in combination with iodoform, an excellent influence in promoting cicatrisation. Herr Oppler recommends the following formulæ: Iodoform (pure), 50 grammes; roasted coffee in very fine powder, 25 grammes; a few drops of spirits of ether; or iodoform (pure), 2 grammes; paraffin, 10 grammes; roasted coffee in fine powder, 0·3 gramme.

A COLLECTION OF SKULLS.—The Natural History Museum at Vienna has been presented with 708 skulls collected through a series of years by Dr. Weissbach, who was for a long time director of the Austro-Hungarian Hospital at Constantinople, and was a very distinguished anthropological investigator. Of the collection 195 are pure Turkish skulls, 131 Greek, 96 Servian or Croat, 48 Hungarian, 43 Armenian, 29 old Byzantine. There are also skulls of Maronites, Albanians, Koords, Asiatic Jews, &c.

A NEW article for dressing wounds, called 'Taffetas Berthault,' has just been brought out, which is considered to be superior to the adhesive plasters hitherto used. It is as transparent as glass, and as thin as the skin of an onion. The condition of the surface covered by it is as easily seen as though it were uncovered. This plaster is as elastic as India-rubber. It cannot be traversed by fluids, and is unaffected by change of temperature. Chemically it is inert, neither changed by acids, alkalies, nor the secretions of the human organism.

MM. HENNEGUY AND VIGNAL, at a recent meeting of the Biological Society, presented a modification of the new Cambridge rocking microtome. In the original model it was necessary to count the notches in order to ascertain the thickness of the section, and the position of the embryo placed on the instrument could not be changed. In the modified instrument, by the aid of an indicator moving along a graduated circle attached and dependent on a regulator, the thickness of the section is at once ascertained. By means of a holder, capable of being moved on three different axes, the specimens studied can be moved in any direction.

FILTERING PAPER AS AN ANTISEPTIC DRESSING. M. Bedoin stated to the Belgian Royal Academy of Medicine that he believes he has found a simple portable, inexpensive, antiseptic method of dressing wounds suitable for the wounded on battle-fields. He recommends the unglazed paper used for filtration. This is disinfected by being placed in a stove at 120° C. (248° F.), and immediately afterwards steeped in an antiseptic substance, then slowly dried. Seven or eight sheets of this paper are superposed on the surface of the wound, and then lightly bandaged. This dressing weighs about forty grammes, so that every soldier can carry one in his knapsack.

A NEW HEALTH-RESORT.—Ten years ago, Dr. Douillard pointed out that the valley of Argèles was remarkably well suited for a sanitorium, where children of parents who had succumbed to phthisis should be treated. A few years later, the town of Argèles offered a building site for this purpose. The sanitorium now receives yearly twenty children, between the ages of five and twelve, all orphans of phthisical parents, and presenting symptoms of the same disease. They all improve in condition. The sanitorium is situated at an altitude of 450 mètres, on the highest ground in Argèles. The temperature resembles that of Amélie-les-Bains, but is less exposed to the east and west winds. The hygrometric condition is excellent. The climate is most suitable to the torpid forms of tuberculosis.

THE BACILLUS OF SYPHILIS.—Herr Carl Weigert, of Frankfort, supports the view of Lustgarten concerning the bacillus of syphilis and smegma, and believes that the bacillus discovered by him is the contagious element of the disease. Dr. Weigert admits that the researches of these writers are confirmed by subsequent researches by Dr. Klempern, and are arguments against attributing a specific pathogenic character to Lustgarten's bacillus. But the fact that this bacillus is found in the interior of cells, in the substance of tissues, and in regions which are never brought into contact with the smegma, coupled with that of its behaviour, when submitted to the influence of certain reagents, which affect only a few micro-organisms, are sufficient indications of the specificity of Lustgarten's bacillus.

CHARCOT'S BONE-DISEASE IN THE VERTEBRÆ.—At a recent meeting of the Paris Biological Society, MM. Pitres and Vaillard showed an anatomical specimen, which demonstrated that the trophic affections, described by M. Charcot, can also take place in the vertebral column. The patient exhibited symptoms of motor incoordination in 1881. In 1883 he was unable to walk; he was free from pain, but said he felt as though his hips were dislocated. The spine became curved in the lumbar region. There was a posterior convexity on the left side, and the waist gradually grew smaller by 23 centimètres. The lumbar vertebra was entirely destroyed; the second presented a collection of osteophytes. The pelvis and femur had similar lesions.

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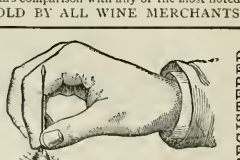

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